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Railway Age

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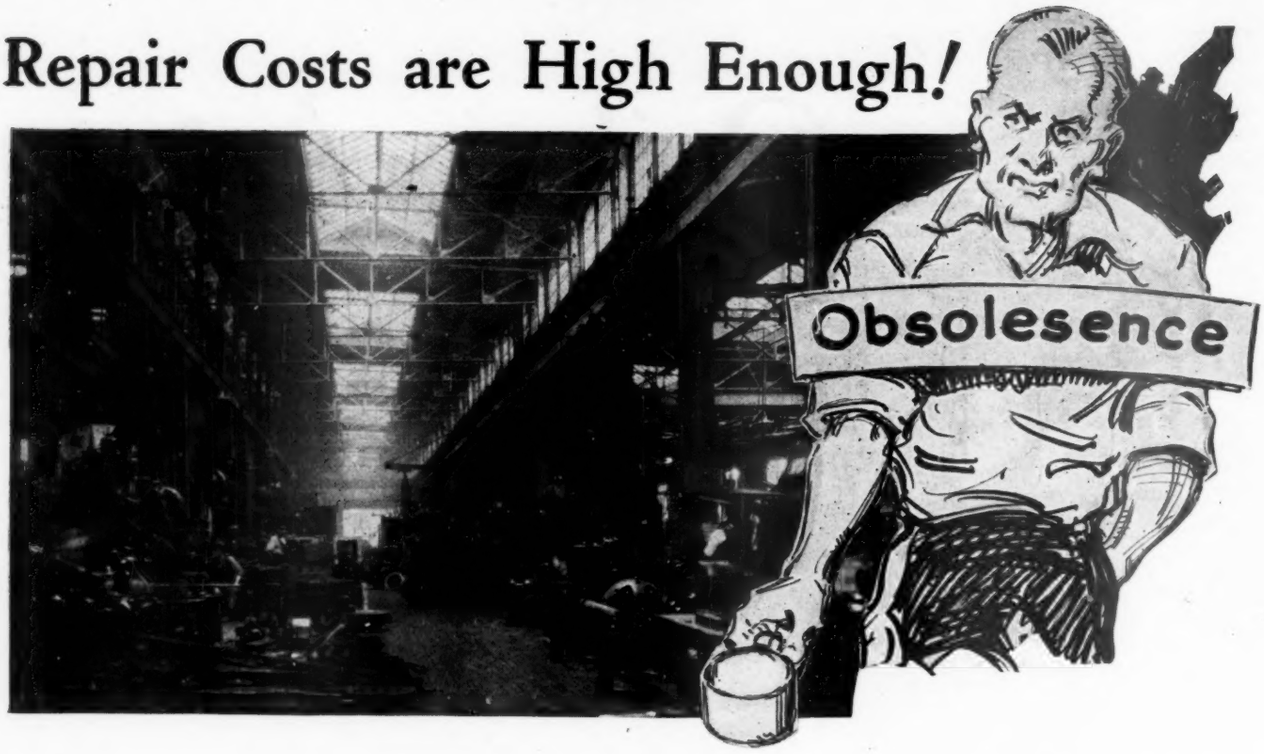
In this Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Repair Costs are High Enough!



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Railway Age

Vol. 89, No. 16 October 18, 1930

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"Time To Fight It Out"

IN the Wall Street Journal of October 6 there appeared an editorial entitled, "Time To Fight It Out." We suspect it was written by Thomas F. Woodlock, until recently a member of the Interstate Commerce Commission, and one of the best informed men in this country regarding the transportation situation. The substance of it was that the time has come for the railroads squarely to meet the attack upon their traffic and earnings being made by the carriers on highways. "It is time for railroad managers to stand up and fight it out," said the Wall Street Journal. "There is no quicker or surer way to popular support."

This statement can be given a much broader application than it was given by the Wall Street Journal. It is time for railroad managers to stand up and fight all who are attacking the railroad industry—those who are attacking it by diverting traffic from it, as well as those who are attacking it by unduly depressing its rates. The railroad industry is in danger of being made the victim of both an "inside" job and an "outside" job. The railroads are suffering from excessive competition between themselves, and also from government-subsidized and inadequately regulated competition from other means of transportation. It is high time they should quit spending their energies in fighting each other and begin devoting them to combating the powerful external influences which are threatening the future of the entire industry.

The railroads afford a large amount of lucrative business to the banking interests. They afford a large market for some of the most important manufacturing industries. They afford employment under normal conditions to about 1,700,000 persons. The rendering by them of good service is essential to the welfare of general business. The time has come when railroad bankers, manufacturers of railway equipment and supplies, railway employees and the large business interests of the country should begin to fight for a square deal for the railroads. If a real fight to protect railroad traffic and revenues is to be made, however, it must be made under the leadership of railway managers, because nobody else will assume its leadership.

The diversion of traffic from the railways is becoming even a more serious menace to them than unfair regulation of their rates. The complete revolution that has occurred in the trends of both their passenger and freight traffic during the late decade can be strikingly indicated by a few simple statistics. The year 1921 was one of such severe depression that the decline of railway traffic was the largest that ever occurred in any year, but the previous growth of traffic had been so great that even in 1921 the railways handled 10 per cent more passenger business and 22 per cent more freight business than ten years before, in 1911. The year 1930 is also one of depression, and this year the railways are actually handling slightly less freight business and 40 per cent less passenger business than they did ten years ago, in 1920. Most of the passenger business they have lost has been taken by private automobiles; but a large and increasing part of it has been taken by motor coaches. Many railways have tried to meet this competition by themselves engaging in the operation of motor coaches. An increasing number of railway men are beginning to believe, however, that in order more effectively to fight motor coach competition the railways generally should establish a day coach rate as low, perhaps, as two cents a mile. This would reduce the revenues derived from the present volume of travel in day coaches. Would it increase the amount of travel in day coaches enough to more than offset the loss of revenue from the present business? This question is one that is surely entitled to careful consideration, but it should be considered and determined by the railways jointly, not merely by the individual lines.

Motor trucks are becoming serious competitors for freight business of almost all kinds. One important reason is that they take freight direct from the door of the shipper to the door of the consignee. The time is here when the railways should carefully consider whether they should not themselves establish, by means of trucks, a pick-up and delivery service which will enable them also to take freight from the door of the shipper to the door of the consignee. When freight is trucked by independent trucking companies to the railroad at one end of the haul and from the railroad at the other end of the haul, the trucking companies make such large charges for their services that the shipper

often finds it more convenient and less expensive to have the entire transportation service rendered by truck. The railroads undoubtedly could establish a pick-up and delivery service by truck in connection with their rail service which would give the shipper a more convenient and less expensive service than that now rendered by trucks in hauling freight over long distances.

The question of the extent to which the railways should engage in pick-up and delivery service is one which they cannot long avoid considering, and the sooner they consider it carefully the better it undoubtedly will be for them.

An Attack Upon Private Capital

The motor coach and motor truck are being enabled so effectively to compete with the railways largely because they are not regulated as the railways are, and are indirectly subsidized by the state and national governments. The comments made by Paul Shoup, president of the Southern Pacific, in his address before the Illinois Chamber of Commerce last week, show that railway officers are coming to a realization of the fact that this is a matter which should be thoroughly ventilated. The many thousands of miles of hard-surfaced highways have been built for use by private automobiles and other vehicles of ordinary size and weight. They are being used more and more for commercial purposes by huge motor coaches and trucks—the latter often pulling trailers—which take up such a large part of the highways, and are driven at such speeds, as to endanger private automobiles and other vehicles of ordinary size and as greatly to enhance the cost incurred by the public in constructing and maintaining the highways.

The highways built and maintained by the railways for themselves represent about three-fourths of their total investment, and therefore upon this investment they must earn about three-fourths of their net return and pay about three-fourths of their taxes. The highways used by motor coaches and trucks often cost the public as much per mile as the railways have invested in their own highways, but the public pays the interest upon the investment in them, and gets no taxes from them as it would if they were private property. It necessarily follows, that, as compared with the railways, those who use them to carry on commercial business are subsidized at public expense to whatever extent they are exempted from making payments for their use which would cover a reasonable proportion of the interest upon the investment in them, of the cost of maintaining them, and of the taxes upon them which would have to be paid if they were privately owned.

Upon what possible ground can any business man or economist who really believes in private enterprise and the rights of private capital challenge these views? We have heard it intimated that commercial transportation by highway should be fostered at government expense because it promotes the "general welfare." When did either subsidized or unsubsidized transportation by highway become more in the interest of the "public welfare" than subsidized or unsubsidized transportation by railroad? The railroads have been provided by the investment of private capital. They render a service that is more essential to the public welfare than any other kind of transportation service. It is therefore plainly contrary to the rights of private capital and to the public welfare that other means of transportation should be so aided by the government as to enable them to divert traffic from the railways that the railways plainly need to enable them to make adequate earnings and maintain their service.

What has been said about government-aided competition by highway applies with even more force to government-aided competition by waterway, because motor coaches and trucks do pay at least something for the use of the highways, while, excepting for Panama canal tolls, carriers by water have the waterways provided for them entirely at public expense, and the federal government, by operating a barge line on the Mississippi river system, has itself engaged at public expense in direct competition with the railway companies.

Do business men think they can consistently profess to believe in private enterprise and the rights of private capital, and at the same time seek and accept, for their own selfish purposes, the use of the power of the government and of money raised by taxation to destroy the private capital invested in railroads?

Attitude of the Public

One of the most gratifying features of the present situation is the attitude of the public towards the railroads and their government-aided competitors. Public sentiment was never more friendly to the railways than now. In all parts of the country attacks are appearing in the newspapers upon the use being made of the highways by motor coaches and trucks which are inspired mainly by the growing hostility to them of private motorists. There are increasing signs of public skepticism regarding the economic justification of extensive development of inland waterways. Railway labor leaders and employees are awakening to a realization that the kind of unfair competition and unfair regulation to which the railways are being subjected concern them because of the resulting reduction in the number of railway employees.

The Wall Street Journal is right. "It is time for railroad managers to stand up and fight it out." The railroad industry is becoming surrounded by serious dangers. The public must be told of those dangers. Definite policies must be adopted for the protection of railroad earnings. Railroad management should test in the highest courts the reductions of rates that were

recently ordered by the Interstate Commerce Commission in the grain rate case. They should use every available means to expose the economic unsoundness and danger of prevailing government policies regarding highway and waterway transportation because of their dual tendency constantly to increase taxes and to undermine the earning power and the service of the railways.

Because of the conditions and influences to which the railroad industry is now subject the present generation of railroad managers has a heavier responsibility than any preceding one. They will determine the future of the railways more definitely than any past generation of railroad managers determined it. If the outcome is favorable to the railroad industry it will be so because this generation of managers will make such a fight as no past generation made or was called upon to make.

Standards No Bar to Progress

THE recent reorganization of Committee C-I of the American Society for Testing Materials opens a new chapter in one of the outstanding adventures in standardization. The advent of a standard specification for portland cement which was brought forth in 1904 and had been adopted generally by 1909, was a boon alike to the user and the manufacturer, for the confidence which the standard product engendered in the mind of the user redounded to the advantage of the manufacturer in the form of a marked increase in the popularity of concrete as a material of construction work.

While it is true that the original standard specification was subjected to minor changes from time to time, one result of which was the attainment of substantial agreement with the United States Government specification for portland cement, these revisions resulted in no material changes as to either form or substance for nearly 25 years. During this period, the voice of the revisionist was lost in the acclaim of those who sincerely believed that the advantages of a stable standard far outweighed its disadvantages.

However, the time eventually came when due recognition had to be given to the advance in the art of cement manufacture. Chief among the important influences for change was the growing popularity of the high-early-strength cements and the demonstrated ability of the manufacturers of portland cement to produce a product possessing properties superior to the minimum requirements of the standard specification. These influences gave rise to a demand for an upward revision of the physical requirements of portland cement, as well as the study of the entire subject of cement properties and the effectiveness of the means for measuring them. The latter comprise the task which Committee C-I is now to undertake under a revised subcommittee organization.

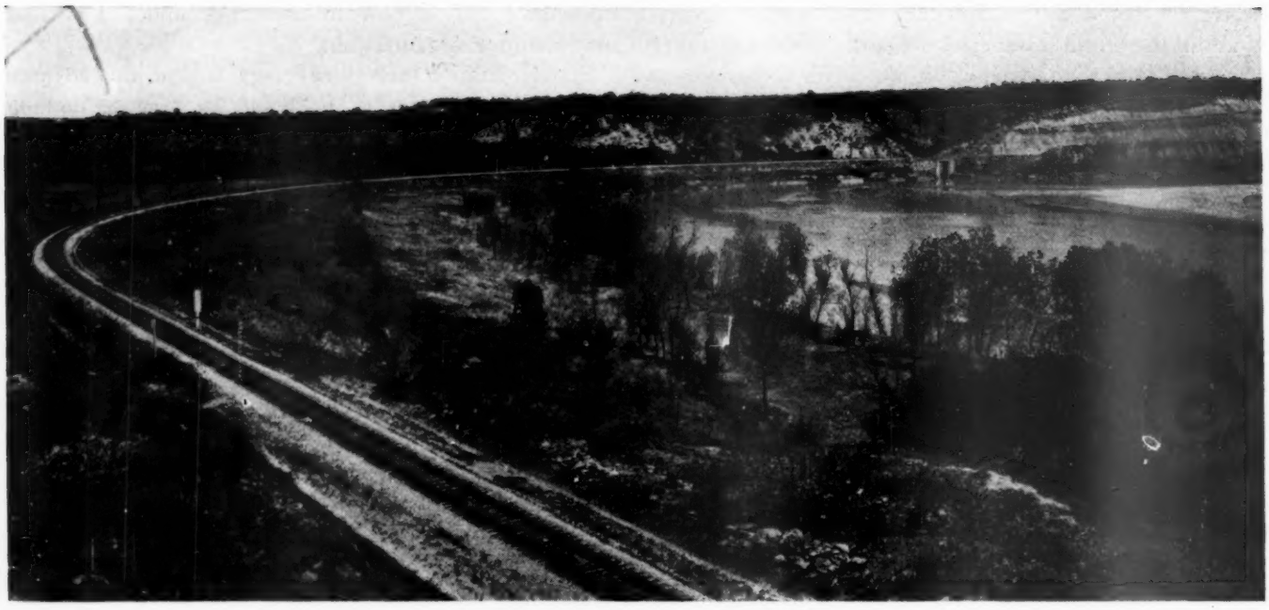
Standardization necessarily lags behind the advance in any art. This is as it should be because nothing should be adopted as standard until it has been thoroughly tried, and any standard, when adopted, is necessarily a compromise between the ideas of the most venturesome on the one hand and those of the most conservative on the other. But the story on the development and promulgation of the standard specification for portland cement should demonstrate that the adoption and use of a standard does not impose a serious bar to progress.

Does the Public Know of Your Low Rail Fares?

IN the fight for traffic with competitive motor coach lines, a number of railways have established special day coach rates equal or approximately equal to the motor coach rates in effect between the same points. These reduced day coach rates have been effective in some instances in attracting increased traffic, but how much more traffic would they have brought to the railways if they had been more effectively advertised?

The motor coach lines which are competing with the railways for passenger business have done a most effective job of advertising. In general it has not been expensive advertising because it has consisted largely of placards placed in motor coach stations and store windows, or affixed to the sides of motor coaches. Despite the small expense involved in this advertising, these placards are so numerous and so inescapable that few can overlook them. For every advertisement of a low railway rate, the average person sees a dozen or more shouting the economies of motor coach travel. As a result of this the public—to all appearances, at least—has had rooted in its mind the conviction that travel by motor coach is invariably cheaper than travel by rail, although this is now by no means the situation.

Such a conviction on the part of the traveling public is dangerous to the railways, and it is one which they can well afford to correct. So long as the traveling public thinks that motor coach transportation is cheaper than railway transportation, the thousands of passengers to whom economy is a primary consideration will patronize the motor coaches without a moment's consideration of the service which the railways have to offer. Reduced rates in railway day coaches may be an effective means of reviving the railways' passenger traffic, but the revival can scarcely be expected to attain its full proportions unless the railways make sure that the traveling public is familiar with the inducements which they are offering.



The Main Line of the T. & P. West of Fort Worth

Improved Facilities Produce Savings

Texas & Pacific's complete rehabilitation results in operating efficiency

Part I

IN October, 1916, following several years during which earnings were insufficient to pay the interest on its funded debt, the Texas & Pacific was placed in receivership, the second in its history. In 1929, this road had a net income of $6,130,074, which was equivalent to $25.86 per share of preferred stock outstanding, or $12.76 per share of common stock outstanding after paying five per cent, or $1,185,150, dividends on preferred stock. Thus, in only 13 years, the Texas & Pacific has staged one of the most remarkable comebacks in railway history.

It is true that oil, which has lubricated the wheels of success on many a line in the southwest, was a factor in this rapid regeneration, but it was only a factor. Another factor was the correction of a vital defect in the financial structure. On February 9, 1923, a congressional act amending the railroad's federal charter of March 3, 1871, removed a restriction on the right to issue securities for the financing of additions and betterments, which had long throttled efforts to make sorely needed improvements. But in the main, the secret of the success of the Texas & Pacific lies in a steady improvement in the physical properties in conformity with a consistent program, although modified from time to time in accordance with the dictates of circumstances and volume of funds currently available.

The Territory Served

During the earlier years of the period of betterment, it was necessary to confine expenditures to projects affording immediate relief, but as the earlier improvements bore fruit and the financial stability of the company improved, it became possible to undertake projects of broader scope and more permanent effect in the way of operating economies and traffic capacity. But, coupled with the physical betterments, there has been built up a competent operating organization which has overlooked no measures for economy in operation.

The Texas & Pacific consists of a main line from Gouldsboro, La., (opposite New Orleans) to El Paso, Tex., 1,160.3 miles; a 66.8-mile line from Marshall, Tex., to Texarkana, Tex.-Ark., affording an important outlet to the northeast; an alternate main line between Texarkana and Fort Worth, Tex., via Sherman, 245 miles, and 595 miles of secondary main line, branches and terminals. In addition, the T. & P. owns controlling interests in the Weatherford, Mineral Wells & North Western, the Abilene & Southern, the Cisco & Northeastern, the Pecos Valley Southern, the Texas-New Mexico, and the Texas Short Line, which from the

Comparative Operating Figures

	Net Railway Operating Income	Net Income	Transp. Ratio	Oper. Ratio
1929	$8,778,383	$6,130,074	30.95	69.70
1928	10,446,475	7,993,956	31.40	67.99
1927	6,497,569	4,113,981	33.51	73.93
1926	6,240,676	3,927,341	35.19	74.72
1925	5,974,105	3,821,555	35.05	75.00
1924	5,801,611	3,878,591	34.30	74.72
1923	5,237,535	3,433,111	35.24	76.65
1922	3,629,473	1,772,584	37.74	81.24
1921	4,545,689	2,740,724	38.70	79.85
1920	1,474,127	609,168*	43.88	89.52

* Net Loss.

physical standpoint are all branches of the main line from Fort Worth to El Paso and total 375 miles.

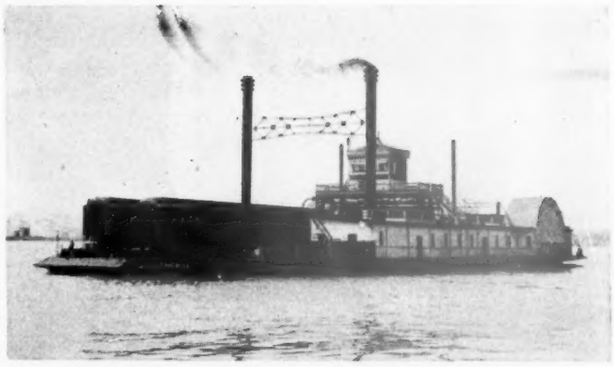
Projected under a federal charter in 1871 as a transcontinental line, construction was completed to Fort Worth in July, 1876, and extended to Sierra Blanca, where it ran afoul of the conflicting enterprise of the Southern Pacific. But in November, 1881, just a month before the line was completed to Sierra Blanca, a settlement was effected under a contract which gave the T. & P. equal and perpetual joint trackage with the Sothern Pacific of approximately 92 miles of line between Sierra Blanca and El Paso.

As a consequence, the Texas and Pacific provides a direct bridge line between connections at El Paso and lines to the northeast at Texarkana, as well as the shortest line between El Paso and New Orleans. In addition, it enjoys the strategic advantages of numerous connections with important north and south lines, some of which have developed as points of heavy interchange. Chief among these is Fort Worth where connections are made with nine railways. There are connections with seven lines at Dallas, while two lines of the Santa Fe (K. C. M. & O. and G. C. & S. F.) are crossed at Sweetwater, Tex. By reason of a connection with the International-Great Northern at Longview Junction, that part of the T. & P. between that junction and Texarkana serves as an important link for Missouri Pacific system movements between St. Louis and southern and southwestern Texas. Being the oldest line in much of the territory it serves, it possesses marked advantages as a result of the development that has taken place with the growth of the cities it serves.

Hardships Suffered

The Texas & Pacific suffered the hardships which confronted all roads that participated in the development of sparsely settled territory and experienced financial difficulties that led to a receivership in 1885, which ended with a reorganization effective on October 31, 1888. This, however, did not remove the underlying obstacles to financial success and the first decade of the twentieth century, which witnessed the financial downfall of many railway properties in the southwest, again found the T. & P. in difficult straits and no

Map of the Texas & Pacific



T. & P. Train Crossing the Mississippi at New Orleans

improvement had been effected by 1915 when the late E. J. Pearson took charge as first vice-president, with J. L. Lancaster as his assistant.

There were many reasons for the predicament in which these officers found the property. Foremost among these were its physical shortcomings as a transportation machine. Except for the easterly 300 miles of line in the flood basin of the Red river, the Texas & Pacific occupies a rolling country, throughout much of which the line was "laid on the ground." As a result, ruling grades of from 0.8 per cent to 1.4 per cent prevailed on all engine districts with the exception of the 210 miles from New Orleans to Boyce, which has no grades in excess of 0.3 per cent. Only one major project for grade revision had been undertaken up to this time. In 1904-5 an alternate low-grade line was built between Cypress, La., and Shreveport along the west bank of the Red river on a 0.4 per cent ruling grade to replace the old 0.8 per cent main line between these two points, but owing to the heavy subsidence experienced in the soft bottom lands it was not until 1918 that this line was in condition for main-line service.

The tracks also were inadequate. The rail was of light section, the tie condition bad, and the ballast inferior and insufficient. The capacity of passing tracks averaged 35 to 40 cars, and these tracks were spaced about 10 miles apart and in many cases were located in the sags. The roadbeds were narrow, the waterway crossings were largely temporary structures and in the cloud-burst area of western Texas much of the line was inadequately protected against washouts.

But what was probably the most serious physical obstacle was the inadequacy of terminals. As a result of a gradual increase in the trackage of the original installations, the terminals lacked definite plan, both as to location and arrangement. The tracks were too short and too few in number to permit of effective switching and the make-up of full trains, and in many locations the situation did not permit of enlargement or effective rearrangement. The same condition prevailed with respect to locomotive facilities and car-repair shops.

According to Mr. Lancaster, who succeeded Mr. Pearson as first vice-president, in 1916, and has directed the destinies of the T. & P. since that time, motive power had to be placed first on the schedule of improvements. Locomotives of greater tractive effort offered the greatest opportunity for immediate returns in the way of operating economies, but it was necessary to impose definite limitations on axle loads by reason of the light track construction. Expenditures were also made for the application of superheaters to existing locomotives. Steps were taken to raise the standard of track maintenance and in spite of the fact that

the line west of Fort Worth was far from self-supporting, considerable expenditures had been made for the improvement of the track when the oil boom in the Ranger field, 95 miles west of Fort Worth, suddenly imposed a volume of traffic on this line which the railway would have been unable to handle but for the improvements made.

The intense activity in the Ranger field starting in 1918 marked the turning point in the fortunes of the Texas & Pacific. This resulted in an increase in earnings by 1920 sufficient to permit of appropriations for additions and betterments amounting to $2,989,564 in that year and in commensurate amounts in following years. This was the real beginning in the progressive upbuilding of the property which has been continued to the present time.

Rebuilding Necessary

A primary need was for development of a stronger track structure, especially heavier rails, and a program for renewals was inaugurated. At first these were confined to 85-lb. rails, but, in 1925, 90-lb. rail was adopted as standard, 102.7 miles being laid with rail of that weight. In addition, 110-lb. rail was laid in 22.8 miles of track and in 1927 that weight superseded the 90-lb. section as standard for heavy-traffic lines. By the end of 1928 the program of renewals had reached the point where 75-lb. rail in main tracks had been reduced from 609 miles in 1923 to 20 miles, while the mileage of 85-lb. rail, which was 913.9 in 1926, had been reduced to 725, and the mileage of 90-lb. and 110-lb. rail had reached 300 and 323 miles respectively.

An extensive ballasting program was also undertaken which resulted in the application of rock or gravel ballast on all the main lines and important branches. At one time, it was the practice to fill out the tonnage of westbound trains west of Ft. Worth, the direction of light movement, with cars of ballast. Between January 1, 1922, and December 31, 1929, a total of $4,960,875 was charged to road and equipment for rock and gravel ballast. Tie plates and rail anchors involved a charge of $2,004,172.

Increased appropriations for maintenance of way and structures, which advanced from $2,036,463 in 1917 to $5,118,022 in 1919 and $8,399,109 in 1928, made it possible to effect a pronounced improvement in the average track condition. Extensive use was made of treated ties, as indicated by the fact that only 32,653 ties out of 1,083,028 ties laid in 1928 were of untreated wood.

Passing tracks have been increased in number and in length, the present standard being 100 cars. Improvements as to this feature of the property has been most pronounced west of Fort Worth, where passing tracks of only 35 to 40 cars capacity were spaced at intervals of about 10 miles, necessitating the construction of new sidings between the old ones and a change in the standard capacity first to 75 cars and later to 100.

The physical improvement of a railway for the purpose of effecting a reduction in operating expenses is generally assumed to embody considerable attention to grade revision. However, the situation presented on the Texas & Pacific is one that does not offer opportunities for a reduction in ruling grades at a reasonable expenditure. From Shreveport to El Paso, via Dallas and Fort Worth, and from Texarkana to Fort Worth, via Sherman, the territory subject to heavy grades, the location is across the drainage. Consequently nothing short of complete rebuilding would effect any appreciable change in ruling grades.

For this reason, grade revision has been confined to what might be termed corrective work between Texarkana and Ranger which embodied the cutting down of summits and raising sags to permit the introduction of longer vertical curves and the smoothing out of gradients on long hills, all for the purpose of improving conditions for gravity operation. The total capital expenditure chargeable to this work and to bank widening between January 1, 1922, and December 31, 1929, amounted to $1,387,280, a relatively minor item in the total outlay for physical improvements to the property which had been made during that period. In addition, considerable expenditures have been made for the protection of embankments from erosion and a total of $4,174,820 was expended for the construction of new bridges, the strengthening of existing structures and the replacement of pile trestles with concrete culverts.

Second-track construction has been confined to districts subject to the heaviest traffic, namely, between Dallas and Fort Worth, for some distance out of New Orleans and a few other locations. After completing 37.7 miles of second track since 1928, the Texas & Pacific now has a total of 96.9 miles of double track on its own lines and has trackage rights over 6.1 miles in addition.

[Parts II and III of this article will follow in early issues.—EDITOR.]

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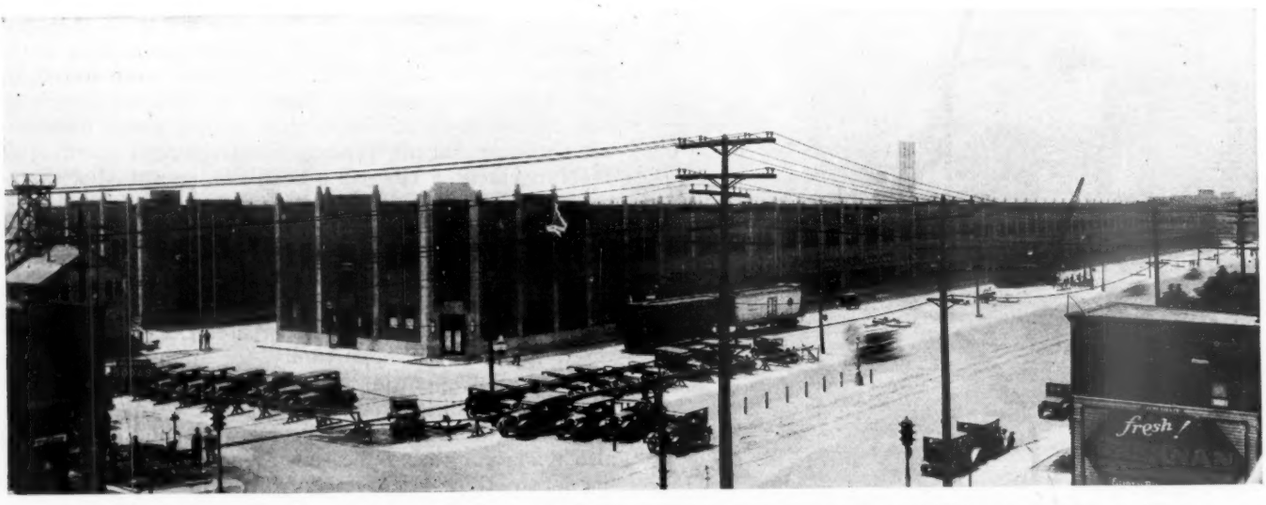
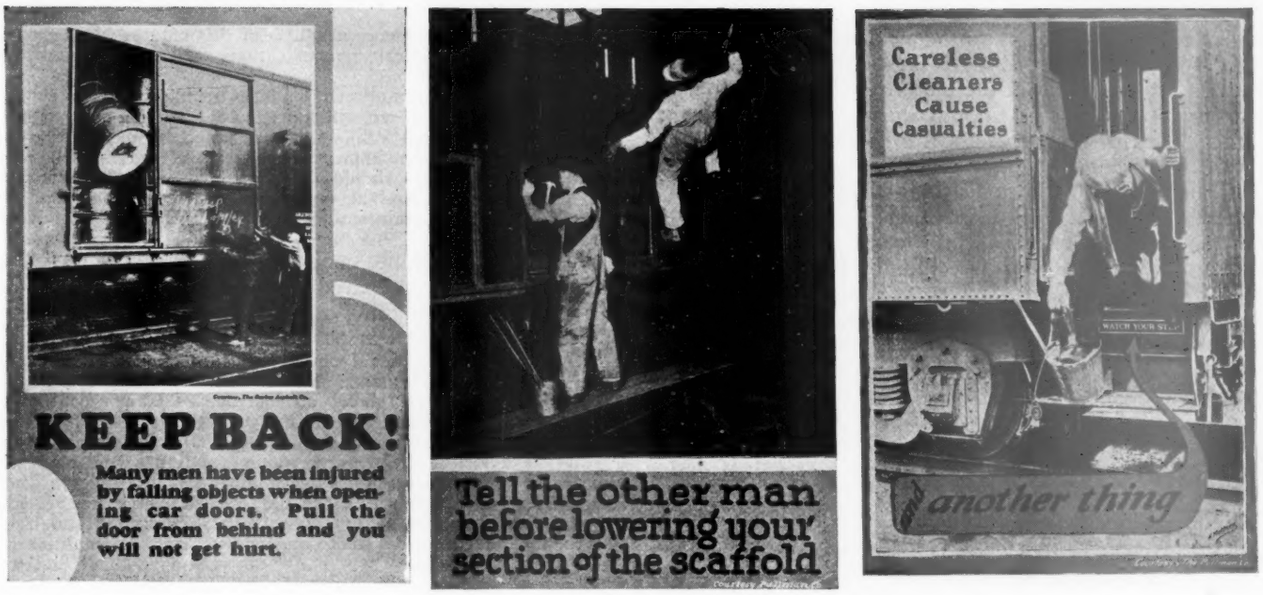


The New Union Produce Terminal, Serving the Pennsylvania, Pere Marquette and Wabash, at Detroit, Mich.



Typical Safety Posters Issued by the Steam Railroad Section, National Safety Council

Shop and Maintenance Men Talk on Safety at Pittsburgh

Final meetings of National Safety Congress also include papers on safety in operating, stores and signal department

SAFETY in the operating department, in shops, in engineering and maintenance of way work and in other specialized departments of railroad operation formed the subject of some 13 papers presented at the recent meeting of the Steam Railroad Section of the National Safety Council, held at Pittsburgh, Pa., from September 30 to October 2, and reported, in part, in the *Railway Age* of October 11, page 745. Of these specialized papers, all of which were presented on the second and third days of the convention, three dealt with safety in operating department activities and the same number with shop safety. Four were devoted to safety work in the engineering department and one each to the stores department, signal department and the marine department.

Safety in Railroad Operation

The morning session of the Steam Railroad Section on Wednesday, October 1, was taken up with three papers on safety in railroad operation: How Can We Reduce Accidents to Employees Due to Being Struck and Run Over By Cars and Locomotives?; Overcoming the Hazards of Operating Hand Brakes, and Accidents When Coupling and Uncoupling Cars and Locomotives.

The first of these, on reducing accidents to employees struck and run over, was presented by George H. Warfel, assistant to the general manager of the Union Pacific and chairman-elect of the Steam Railroad Section. From the facts that, in the last four years, an average of 420 men have been killed by being struck or run over out of a yearly average of 1,350 employees killed from all causes; that mortality from this type of accident is over 40 per cent, and that more than half of the fatal accidents resulting from this cause occurred to trackmen or other maintenance of way employees, Mr. Warfel drew the conclusion that to reduce this most fertile cause of employee accidents attention must be concentrated primarily on maintenance of way forces and secondarily on yard and train forces. He then went on to give a number of rules for the protection of trackmen, switchmen and trainmen from accidents of this type, some of the more important of which were as follows:

Look both ways at once when anything like a train is heard. Insist that track foremen drill this precaution into their men.

Have each man warn the entire gang as soon as he hears a train.

Instruct foremen or assistant foremen to act as flagmen or lookout on large gangs or when view is obscured in either direction.

Teach track walkers to look both ways at frequent intervals on single track and to walk against the current of traffic on double track.

Instruct men to stand between or outside of tracks when watching passing trains and not to walk or stand between rails, especially with any noise in the vicinity which might drown out the sound of an approaching train.

In reply to questions raised in discussion of his talk, Mr. Warfel explained that these principles were instilled into the men on the Union Pacific through safety meetings held once a month during the winter when track work is light, half the foremen in any given district being called to these meetings every other month and being instructed to teach their men what they are taught at them. All maintenance of way employees are given a book of safety rules; each division is covered every two or three months by a safety supervisor who holds safety meetings with each track gang, and every track walker and motor car operator is required to qualify on sight and hearing and on the safety rules.

It was next pointed out that the Lehigh Valley, New York Central, and other roads also follow much the same methods, foremen, in some cases, being required to devote some time each week to safety instruction of their men.

The paper entitled Overcoming the Hazards of Operating Hand Brakes was read by C. W. Hammond, assistant general safety agent of the New York Central. Extracts from Mr. Hammond's paper follow:

C. T. Bailey, chairman of the committee on train service accidents of the Safety Section, American Railway Association, in a report submitted before the recent convention of that section at Denver, Colo., called attention to the fact that there had been a 44 per cent reduction in casualties due to train service accidents between 1923 and 1929. However, when we start to subdivide train service accidents occurring during this same period, we find that casualties caused by operating hand brakes were reduced only 31 per cent.

I believe that the goal of a 35 per cent reduction in this class of accidents by the end of 1930 will be reached, for the following reason: When we compare the reduction in casualties between 1928 and 1929 we find that there were 25 killed and 1,867 injured in 1928 as against 37 killed and 1,755 injured, or an increase of 12 killed and a decrease of 112 injured. This represents a total decrease in casualties of 100, or five per cent, and if the same percentage of reduction is maintained during the year 1930 we will surely decrease casualties due to this cause at least 35 per cent over the seven-year period, 1924 to 1930, inclusive.

While this is nothing to be especially enthusiastic about it will show a 35 per cent reduction, but it would indicate to me that special safety activities should be undertaken to curb this type of accident, more especially as it applies to the number being killed. Experience has taught me that accidents due to operating hand brakes can be prevented.

When we start to analyze the 21 causes of hand brake accidents, we find that there are three outstanding causes that contribute to nearly 85 per cent of the deaths and 50 per cent of the injuries, as follows: (1) Losing hold, slipping or falling, not otherwise classified; (2) Sudden stopping, starting, lurching or jerking of train or car, and (3) Being struck by brake club because wheel flew around.

The first cause can only be prevented by the brakeman's first knowing that he has a proper foot and hand hold and that his hand brake has been tested before he depends upon its use. He should be on his guard to prevent being struck by the brake club or loosening his hand hold on account of the wheel flying around.

The second cause can be overcome by first knowing that the car is detached from the string of cars being switched before starting to operate the hand brakes. A good rule to follow while operating a hand brake is always to anticipate that a sudden start or stop of cars may be made at any time and be ever on the alert to guard against it.

The third cause can be overcome by using the brake pawl while operating the brake, ever remembering to push on the brake club with the left hand and pull on the brake wheel with the right hand.

My observations prove conclusively that there are fewer hand brakes being used each year, so that there should be less accidents of this nature, for two reasons. First, many railroads are running solid trains to final destination with as few switching movements as is consistent with the make-up of the train, which saves additional switching at many terminals. Second, many roads are installing car retarders in their hump yards to control the switch movement of cars, thereby reducing hand brake operations. However, I think it is a blot on our intelligence to admit that we should be obliged to depend on mechanical devices to reduce casualties of this nature, when proper education and practical demonstrations will bring about the desired results.

Proper inspection and maintenance of hand brakes should not be overlooked, as we still find employees being injured due to faulty equipment. While the percentage is small compared to those injured from improper use of hand brakes, I believe our inspection forces should do everything in their power to detect any defects, and at repair points, proper consideration should be given to maintaining each car with an efficient hand brake.

C. L. LaFountaine, general safety supervisor of the Great Northern, prepared and presented a paper on accidents when coupling and uncoupling cars and locomotives, which read in part as follows:

In regard to fatalities from this type of accident, we have had a uniform performance showing a trend downward to the year 1929, which year shows an increase of 60 per cent over the record for 1928 and 23 per cent over that for 1927. Without making any further analysis this would appear alarming. However, I would like to direct your attention to the fact that in making a comparison in the number of fatalities in 1929 and 1928, you are selecting the best record by far ever made by the American railroads; and that in 1927 was second only to the 1928 record. In comparing the number of fatalities in 1929 with the average for the 10-year period you will find we had a decrease of seven per cent. Further, consideration should be given to the fact that the railroads enjoyed a greater volume of business in 1929 than in any previous year, which of necessity must have required a larger addition of new employees and thousands of additional coupling and uncoupling transactions.

In checking over figures showing employees injured we find a most uniform performance with almost a constant trend downward in number, accomplishing the best record the railroads have ever made in this respect last year.

Following this review of coupling accident statistics, Mr. LaFountaine analyzed various causes of these accidents, finding that they were caused mainly by unexpected movement of cars while adjusting coupler, either due to slack, mistake or misunderstanding in giving or observing hand signals, and other causes. This condition may be largely avoided by giving signals as carefully as possible and enforcing a complete understanding on the part of all train and yard service employees of their work and of the possible effect of their actions or of careless signals. Additional causes of coupling and uncoupling accidents are: The unexpected movement of cars due to slack, which can be partly overcome by carefully training men to anticipate and be prepared for this condition; adjusting couplers when moving cars are nearing each other, a practice which Mr. LaFountaine characterized as "unnecessary and reckless;" and manipulation of the uncoupling lever, which should be rendered unnecessary by careful inspection to keep such equipment in good working condition. In conclusion, Mr. LaFountaine said: "We must secure the hearty co-operation of operating officers to insure that men entering the service are correctly instructed and that safety rules are strictly enforced. This, together with the continuance of educational campaigns which are now in force, will bring about a reduction in this class of accidents."

Shop Safety

Just as the Wednesday morning meeting was devoted to safety in the operating department, the Wednesday afternoon session, following addresses by C. W. Galloway and T. H. Carrow (reported in the *Railway Age* of October 11), was occupied with a discussion of safe practices in railway shops. The program began with a talk on Head and Eye Protection for Welders, by A. J. Gates, safety inspector, personnel department, Pennsylvania, and included papers by F. R. Bradford, superintendent of safety of the Boston & Maine, on Collapse and Fall of Objects in Shops, and by G. N. Kramerer,

shop safety agent of the Bessemer & Lake Erie, on the subject of Shop Burns and Falls.

Mr. Gates, in opening his paper, stated that:

In the protection of the head and eyes of welders, consideration must be given to numerous features which involve not only the injury cause, but the efficiency of the operation being performed. That the idea may be more clearly understood, the work has been subdivided into the three most common classifications for which protection is necessary. These are:

(1). Oxy-acetylene cutting and welding.
(2). Metallic electrode welding.
(3). Carbon arc cutting and welding.

In this work two injurious invisible light rays are encountered, the infra-red and ultra-violet, as well as visible light of varying high intensities.

After this introduction, Mr. Gates went on to describe the use and beneficial effects of various types of filter glass, to protect the eyes of welders from these rays; and then described, in some detail, the various types of protection available and advisable in doing each of the three kinds of welding mentioned in his introduction. Following a list of recommendations as to booths, screens, goggles, helmets and hand shields, and some suggestions as to means of protecting other men working in the vicinity from injurious light rays and flying particles resulting from the welding process, he closed his paper with the statement that "there is a definite recognized hazard which can be controlled in direct proportion to the efficiency of the devices used in relation to the operations."

The next speaker, F. R. Bradford of the Boston & Maine, presented a paper on The Collapse and Fall of Articles in Shops, which read in part as follows:

There are few types of accidents in which the fundamental cause is so clearly defined. We know without possibility of doubt that inanimate objects, insecurely fastened or supported in an elevated position, will tend to reach a lower level at an accelerating rate of 32 ft. per sec. That this has in fact occurred with rather disturbing frequency is indicated in the reports of the Bureau of Statistics of the I. C. C., which show, for the year 1923, 46 fatalities and over 15,000 reportable injuries due to collapse and fall of objects in non-train accidents. In the seven years prior to the "safety era" there were reported, under this classification, an average annual toll of some 50 persons killed, and nearly 12,000 severely injured. This class of accident, by the way, is not confined to shops. On the contrary, it includes all branches of railroad activities, and its casualties account for over 12 per cent of those in all types of non-train accidents.

Whether the number of falling objects has actually been diminished, or you have taught your employees better how to dodge, or both, I am unable definitely to determine, but the result has been a year to year reduction in the total number of reportable accidents considerably in excess of your contemplated five per cent per year, as follows: 14.6 per cent, 14.4, 10.4, 17.8, 10.6, and 5.2 per cent, respectively, in the years 1924 to 1929, inclusive, a total reduction of 73 per cent, or 11,300 injuries. Remarkable as have been the reductions in this type of accident, which up to only a few years ago were generally considered "unavoidable," there is still plenty of opportunity for further improvement.

The foreman selects the materials and directs the placing of scaffolds, staging, ladders, shoring, etc., and his is the direct responsibility for their strength and adequacy for the job at hand. Obviously, however, he must first have had the necessary training and experience to qualify for this responsibility and the management must be willing to furnish the proper quality and amount of materials required. With large erection, it is probably advisable and most efficient to engage an expert staging or shoring contractor, but stagings, jacks, etc., used in ordinary shop or rip yard work and in bridge and building maintenance are distinctly within the province of the local or gang foreman.

In recent years, largely owing to the activities of interested foremen, employees and safety committees, improved types of ladders, blocking, staging, supports and braces have been, and are being developed, some of which have been standardized and put on a commercial production basis. This inventive activity undoubtedly has had a marked effect in improving efficiency and reducing accidents and should be encouraged.

While the collapse of structures, stagings, jacks, etc., probably contributes an excessively large proportion of the fatal accidents in this class, the simple falling of tools and materials causes the greatest number of injuries, and in the aggregate probably the greatest loss of time and expense. The reason for things dropping is explained by the law of gravity, but the reasons for things being in a position to drop accidentally are the old offenders—indifference, negligence, thoughtlessness, clumsiness, ignorance, hurry, and, occasionally, maliciousness. None of them has any justifiable place on a well-managed railroad. Their presence, as indicated by repeated casualties due to falling tools, materials, etc., is a reflection on the ability or willingness of the foreman to personally direct and lead his men in all their activities. That accidents in this class are readily susceptible of practically complete elimination through reasonably adequate supervision is clearly apparent in the records being made by the leading industries in such groups as the metal, cement, and quarry sections, as well as by the railroads which lead in safety in our own section.

In closing, may I paraphrase the 1929 report of the A. R. A. committee on non-train accidents: In six years, reportable casualties listed in class (h) (collapse, fall, etc., of objects), have been reduced 73 per cent. Gratifying as this reduction may appear, the very fact that such a material reduction has been so readily made supports the belief that a further large decrease from the present figures is still easily possible by intelligent and continued improvement in supervision.

The concluding speaker at the shop safety session, G. N. Kramerer of the Bessemer & Lake Erie, opened his paper, on accidents resulting from burns and falls in shops, with the following remarks:

In the last six years 24 per cent of our lost time accidents on the Bessemer & Lake Erie have been caused by falls and burns. In 1929, only 12 per cent of our lost time accidents resulted from these causes. This means that we now have about one-eighth as many accidents from these causes as we did six years ago. Our accidents now are only about one-fourth of what they were six years ago.

The most common causes of these accidents, in their order of frequency, are:

Falls—From engine or car or into car.
Slipping or tripping on ground level.
Holes or loose obstructions along track.
Slipping or tripping from above.
Burns—Hot metal, flue dust or flame.
Steam, hot water or acids.

The Carnegie Steel Company Safety Booklet states that "A dirty plant means accidents." I think we will all agree to that. Good housekeeping is one of the most important things in the prevention of accidents from falls. A foreman cannot expect to have a good safety record if he does not provide a place for tools, surplus material, scrap material, etc., and insist on these things being kept in their place when not in use.

This necessity for "good housekeeping" was the central theme of the first part of Mr. Kramerer's paper, which included many recommendations as to methods of keeping shops in order as a means of preventing falls. On the subject of burns, his principal suggestion was that men be supplied with adequate equipment—shoes, gloves, goggles, etc.—and that they be required to keep it in order and to wear it when working whereever there was any danger of being burned from any of the causes listed above. Both of these thoughts were summed up, and a general safety suggestion added, in the final paragraph of his paper, when he said:

Statistics tell us that only about 15 per cent of accidents come from defective equipment and that the remaining 85 per cent are caused by man failure. Then, in addition to practicing good housekeeping and keeping equipment in good order, we should strive to educate men in safety, so they will not break the safety rules and will do more real thinking. Don't forget that "The best safety device is a careful man." A careless man will get hurt where equipment is 100 per cent safe, but a careful man can work a long time in a hazardous place without getting injured.

Engineers Discuss Safety

The first of several papers on safety in maintenance of way work and in the engineering department was on the subject of Safety for Bridge and Building Employees, and was read by E. W. Boots, engineer maintenance of way, Pittsburgh & Lake Erie. In De-

cember, 1925, Mr. Boots explained, the officers in the bridge and building department of P. & L. E. began a determined effort to reduce the number of accidents incurred by that department. An analysis of the 22 reportable injuries suffered during the years 1924 and 1925 showed, as the speaker pointed out by explaining the circumstances surrounding each of these accidents, that 14 could have been prevented by adequate supervision, that two were minor and would not have involved any loss of time "had the foreman complied with instructions to have any minor injury attended by a surgeon," and that six were directly due to carelessness on the part of the man injured. Following this investigation, "the officers renewed their efforts to reduce accidents by calling the attention of the foremen to what could have been done, and the foremen renewed their efforts and discussed accidents with their mechanics," with the result that from July 1, 1927, to the present time, there has not been a single reportable accident in the bridge and building department of the P. & L. E., and not one for which a foreman has been responsible since July 14, 1926. From this record Mr. Boots drew the conclusion that: "Foremen and other supervisory officers by constant attention to the work of the employees under them can prevent all accidents, with a very few exceptions.. The descending casualty rate of the bridge and building department is the result of making safety a part of the work and practicing constantly safe methods."

Power Maintenance of Way Equipment

Following this paper was one by A. E. Willahan, assistant chief engineer, Kansas City Southern, on Hazards of Modern Power Maintenance of Way Equipment. By way of introduction, Mr. Willahan said:

> One of the parts that machinery plays in modern industry is the reduction of unit cost. Our transportation systems have recognized this fundamental fact. Wherever and whenever human brains can conceive a machine that will produce a thing cheaper and do away with the drudgery of manual toil, industry demands that it be built. Machines have come to stay, and will increase in number rapidly. Our problem, then, becomes one of devising ways and means of using them efficiently, and, from the human standpoint, with the minimum amount of injury and loss of life.

He then went on to consider the dangers inherent in a number of machines now commonly used in maintenance of way work, taking up in order excavating machinery, hoisting cranes, mechanical rail handling devices, ballast-shaping devices, tie tamping equipment, adzing machines, spike and bolt drivers, pullers and tighteners, welding apparatus and weed burners and sprayers. In each case, thorough education of the crew in the use and operation of the machine; constant inspection to keep the equipment in safe condition, and expert supervision were recommended as the best methods of reducing the dangers involved. The movement of the machines themselves from place to place, and the noise which they make in operation—with the attendant danger of drowning out the sound of an approaching train—were characterized as the general hazards of such equipment. These may best be guarded against, in the opinion of the speaker, by enforcement of safety rules, the use of mufflers, and unremitting care. In conclusion:

> The question confronting the railroads is: Can track work be done with a machine with less injury to the men than by strictly hand methods? The answer is: Yes—because it reduces man-hours. But we must first recognize the inherent hazards of each type of machine used, and then do everything humanly possible to eliminate them. There are several advantages in our favor. Three specific ones are: Lesser number of men involved; a higher grade of intelligence, and better organization. We have proved to our own satisfaction that this is true. The road with which I am connected has one or more of each of the machines I have been discussing. Our safety records show, that as mechanical means for doing track work have expanded, our injuries per million man-hours have been consistently decreasing.

Other Paper on Maintenance Safety

The final session of the convention, on Thursday morning, October 2, opened with another discussion of safety in maintenance of way work, the subject being motor car accidents and the speaker D. G. Phillips, superintendent of safety of the Wabash. Presenting his talk in the form of a day's motor car trip with a section gang, Mr. Phillips gave a number of rules for inspection, maintenance and use of motor cars, and for their safe operation under various conditions—on heavy-traffic lines, in foggy weather, at highway crossings, through interlocking plants, etc. The main theme of his discussion, however, was that safe operation of motor cars depends far less upon the formulation or teaching of safety rules than upon seeing that these rules are lived up to. Any section foreman or safety supervisor, Mr. Phillips said, already knows all there is to know about the equipment and operation of such cars. Yet accidents continue to happen, usually as a result of defective equipment, improper operation, or a combination of both. The problem, therefore, both as to inspection and operation, is to make sure that section men do those things they know they should do, and do not do the things they know they should not do. To attain this end, constant repetition of safety precepts is essential, with the idea that such constant repetition, even of known facts, will produce the desired results.

Following a brief discussion of this subject, E. G. Evans, superintendent of safety, Louisville & Nashville, added to the record of the meeting, but did not read, a paper on Handling Ties, Rails and Other Material. For the most part, Mr. Evans' talk was a resume of methods used by the L. & N. to insure freedom from accidents in handling rails, ties and ballast, whether in ordinary maintenance, betterment work or new construction. Selection of men experienced in this work and an adequate, well-conditioned supply of all necessary track tools are important requirements, he stated, but—particularly in the handling of rail—"careful planning of all details and constant supervision are the best safeguards. * * * The safe way to do work is generally the common sense way—this we believe is particularly true of track work. Our task is not so much to teach our foremen and their men to distinguish between the safe and the unsafe way of working, as it is to arouse them to a point where their interest will cause them to observe more keenly the actions of their men and the possible or probable results."

Safety in Purchases and Stores, Signaling and Marine Departments

In the unavoidable absence of J. P. Kavanaugh, general storekeeper of the Chesapeake & Ohio, who was to have read a paper on Accident Prevention in the Stores Department, a discussion on this subject was lead by E. R. Cott, supervisor of safety of the same road and chairman of the section's program committee. After pointing out that the excellent safety records now being established by the C. & O. stores

department proved safety to be largely a by-product of the man in charge, Mr. Cott went on to discuss the hazards introduced into stores work by the use of mechanical equipment, particularly by gasoline-operated tractors, where the very presence and use of gasoline involves a number of commonly-known dangers; and by trucks, which brought with them problems of proper loading. He also advocated more careful routing of material through the stores department, as a means of reducing the amount of handling it must receive; and agreed with G. N. Kramerer that "good housekeeping" —clean plants, careful piling and storing of material, etc.—was an effective means of avoiding a bad accident record. In closing, with a recommendation for closer contact between safety men and purchasing agents, he suggested that the latter should seek to obtain the highest quality of tool consistent with a proper price, and should know that such tools are not endangering the men who use them by failing to fulfill the purpose for which they are intended.

In general discussion of this topic, representatives of several roads mentioned the fact that in their stores departments—as well as in other phases of their operations—no man was allowed to operate a mechanical device with which he was not thoroughly familiar, while the necessity of having stores departments thoroughly familiar with Bureau of Explosives rules for the transportation of dangerous articles was also pointed out by several speakers. Toward the end of the discussion the question of tool reclamation was brought up, and it was established that difficulties from this source, which lie in using tools of different types, tempers, qualities of steel, etc., could be overcome, as on the C. & O., by standardizing on one high-grade tool of each type and having men specially assigned to its reclamation and inspection, or, as on the Wabash, by sending these standard tools back to the manufacturer for reclamation.

A Safety Program for Linemen and Signalmen

The final paper of the Steam Railroad Section's meeting, setting forth an accident prevention program for linemen and signalmen, was prepared by P. M. Gault, signal engineer of the Missouri Pacific, and read, on Thursday morning, by R. G. Foster, office assistant to the signal engineer, same road. Extracts from his paper follow:

As these men usually travel and work alone—both day and night—in all kinds of weather, it is necessary that they use every precaution for their own safety. * * *

Signal and line work requires men of a high degree of intelligence who have had some years of training along these lines. They are usually, therefore, quite ready to take advice and to follow instructions intelligently. Supervisors and foremen should be thoroughly acquainted with the qualifications of the men working under them and should be certain that a man is capable of handling such work as is assigned to him, particularly when such work may become hazardous if handled by a man not entirely familiar with it. Particularly care should be used in the selection of men to work on or around high voltage lines. * * *

There are certain customary safety devices for use of men doing this class of work. Each supervisor or foreman should see that his men are equipped with these devices and that they are properly used. * * * The habit of being cautious should be maintained at all times and warning signs and signals should never be ignored. * * *

Observance of the rules is the fundamental requirement of safety. It is, therefore, necessary, first, that the supervisory forces are strongly impressed with their responsibility for the safety of their men, and, second, that they make their men feel the sense of their own responsibility both to themselves and to their fellow workers.

Each man should be supplied with a book of safety rules and the supervisor or foreman should personally see that the men under their jurisdiction have familiarized themselves with, and properly interpreted, these rules. Perhaps the best way to handle this is by group meetings. * * * The men should be advised that surprise checks will be made to see that the safety rules are being adhered to; they must understand that these checks are not to be made in the spirit of eavesdropping but for their own personal welfare and to assist in keeping them on the alert. * * *

Inspection of tools is a highly important factor in safety. * * * The men themselves should immediately turn in for repairs any tools found to be defective.

When accidents do occur, a clear, detailed report should be made immediately to the proper officer. * * *

Safety work on the part of the employers not only means the issuing of rule books and holding of meetings, but it means continually keeping the idea of safety before the men by placards around the work and by exemplary conduct of the supervisory forces when they are in contact with the men. Supervisors, foremen and workmen alike must be made to realize that the A, B, C of efficiency and safety is to *Always Be Careful.*

Inspectors' Session

Following the regular program, which ended with the reading of Mr. Gault's paper, the fifth and last session of the Steam Railroad Section was concluded by an informal inspectors' session, consisting of questions and general discussion from the floor, with C. T. Bailey, chief safety agent of the Oregon Short Line, acting as chairman. Types of couplers to be used when handling trailers with motor cars, and various forms of motor car headlights and car inspectors' hand lamps were the subjects of principal interest, around which most of the discussion was centered. Various suggestions were advanced as to the most effective types of these three forms of equipment, but no definite conclusions or standards were reached.

Safety in Lighterage Operations

Speaking before the Marine Section of the National Safety Council on Thursday, October 2, F. H. Cogan, chief tug dispatcher of the Delaware, Lackawanna & Western, outlined in some detail safety practices used by his road in its lighterage operations in New York harbor. A large part of his paper was taken up with a description of the Lackawanna's marine services, of the safety records established in his department, and of safety rules to be applied under specific conditions. Other paragraphs, of even more general interest, are reprinted here:

A highly trained personnel is required for satisfactory results; teamwork and the ability to work together without friction is essential. While manoeuvering to pick up and land a tow, signals are sent from pilot house to engine room almost continuously; failure to have these signals answered correctly and promptly is sure to result in an accident to either personnel or property. * * * The deck crew must familiarize themselves with methods used by captain handling tows, so that they will know when and where to place lines without being told each time.

Under working conditions such as these, it can readily be understood that it is to the advantage of all concerned to practice safety at all times. If one of the regular crew has to lay off due to an injury, a substitute must be placed on the boat, and even though he may be experienced and competent, it takes time for him to become acquainted with the methods used on that particular boat.

It will be noted that 77.5% of entire time lost was due to two causes, i.e.: (a) Slipping or falling; (b) Having foot squeezed between boats or dock.

One of the first duties of the original committee was to prepare and distribute a book of safety rules. These rules have been revised twice since issued; but many of the first rules remain unchanged. Following are a few of them:

Employees are forbidden to:

(a) Stand on rail or guard to throw or receive line.

(b) Jump from boat while it is moving.

(c) Stand close to a line with strain on it.

(d) Stand under boom of derrick or under a load which is being lifted.

(e) Stand or walk on rail of floats when approaching dock or bridge.

(f) Attempt to replace hatches while men are working in hold of boat, as the hatch is liable to drop on someone below.

(g) Smoke on boats loaded with oil or other inflammable material.

(h) Go ahead of a hand truck down a steep grade.

Each employee must sign a receipt for his book of safety rules reading as follows:

"The undersigned having read and familiarized himself with the rules contained in the Book of Safety Rules, revised August, 1926, agrees to comply therewith and to return the book at the termination of his employment." This receipt must be returned within 10 days to the issuing officer.

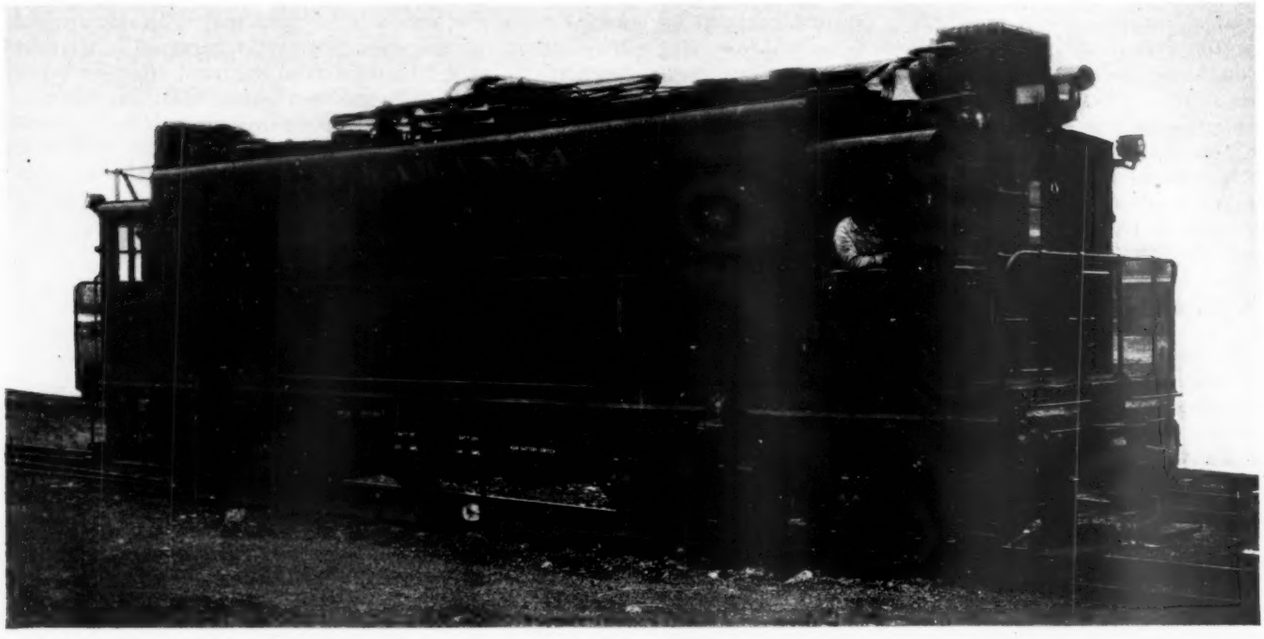
We believe in the value of posters and other safety literature and use same when obtainable.

Electric Locomotives for the Lackawanna

THE first of two electric freight and switching locomotives of somewhat unusual design was recently shipped from the Erie, Pa., works of the General Electric Company to the Delaware, Lackawanna & Western. These locomotives are of the trolley, oil-electric, battery type, capable of operating from a 3,000-volt trolley, an oil engine, or battery. Operation, when outside the electric zone, will normally be with the oil engine and battery jointly supplying power.

The locomotives are to be used in transfer service between the Jersey City yard and Secaucus and Harrison yards. They will also operate as switching locomotives in these yards. The equipment includes motors and controls for performing continuously, while in the electric zone, from the 3,000-volt direct-current trolley. For operation outside the electric zone, a 300-horsepower Ingersoll-Rand oil engine is included, direct-connected to a 750-volt direct-current generator which is used both to charge the storage battery and to supply power to the traction motors. The control arrangements permit the supply of current to the motor at 600 to 700 volts from the generator and battery in parallel. At light loads the excess power of the engine is used to charge the battery; at loads above 300 horsepower the battery discharges and relieves the engine from overload. The auxiliaries operate from the storage battery.

The locomotive is of the box cab type, mounted on two two-axel swivel trucks with each axle driven by a geared, direct-current series motor. The battery consists of 360 Type MVA-21 Exide Iron Clad cells, designed especially for locomotive duty.



The Locomotive Will Operate from a 3,000-Volt Overhead Trolley or from Its Own Oil Engine-Battery Power Plant

The Motors

The four traction motors are of the box frame type, designed to operate two in series across the 3,000-volt supply. Provision is made for obtaining increased tractive effort at the higher speeds on internal power by shunting approximately 50 per cent of the field current through a non-inductive resistance. The control is Type PCL, single unit, arranged for non-automatic operation. Interlocking is provided between the trolley and battery circuits by means of contactors and transfer relays so that it is possible to energize the traction motors from only one of these sources at a time. The engine-generator set is started by connecting the battery to the generator through a suitable starting resistance.

Weights and Dimensions

The total weight of the locomotive is 124 tons in running order and a maximum tractive force of 60,000 lb. is available at starting. The maximum permissible speed is 40 miles an hour. Following are the approximate weights and dimensions:

Dimensions (Approximate)	
Length inside knuckles	47 ft. 10 in.
Total wheel-base	34 ft. 1 in.
Rigid wheel-base	8 ft. 3 in.
Width over-all	10 ft. 2 in.
Weights (Approximate)	
Total locomotive, less fuel, water and sand	243,000 lb.
Total locomotive in running order	248,000 lb.
Weight on driving axles	248,000 lb.
Weight per driving axle	62,000 lb.

Traffic Clubs Discuss Trend Toward Mileage Rates

Optimistic note sounded in address on 'Railroads and the Business Outlook" at Atlanta—Next meeting at Chicago

THE trend in rate making toward the placing of charges for the transportation of freight upon a mileage basis, and the attitude of the Interstate Commerce Commission with respect to such a basis of rates were discussed at the meeting of the Associated Traffic Clubs of America at Atlanta, Ga., on October 8 and 9, both in formal addresses and from the convention floor. J. W. Roberts, assistant vice-president of the Pennsylvania, in an address on the current outlook, pointed out a number of indicators which show that in many ways the railroads as a group have been one of the industries least adversely affected during the present business depression. A large portion of one of the sessions was devoted to a consideration of the functions of the industrial traffic manager and to an examination of the ways in which the Associated Clubs can more adequately serve a useful purpose as an organization.

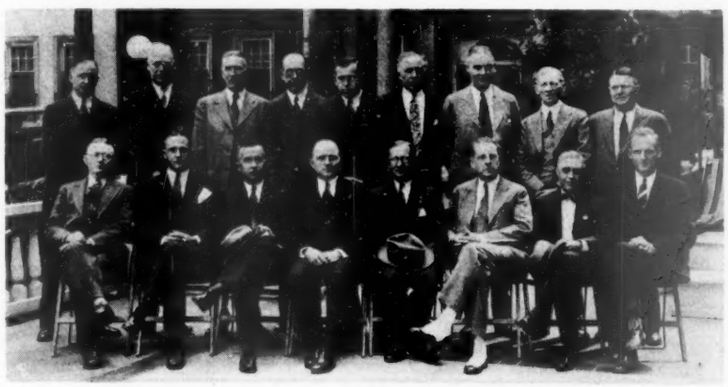
President Re-elected

At the closing session the meeting re-elected T. T. Harkrader, traffic director of the American Tobacco Company, New York, as president for the ensuing year. E. R. Oliver, vice-president in charge of traffic, Southern, Washington, D. C.; George A. Blair, general traffic manager, Wilson & Co., Chicago, and J. M. Fitzgerald, assistant to chairman, Committee on Public Relations of the Eastern Railroads, New York, were elected vice-presidents, and W. E. Butterbaugh, professor of transportation, University of Minnesota, St. Paul, Minn.; T. B. Curtis, general agent, Charleston & Western Carolina, Atlanta, and R. C. Bray, traffic manager, Trojan Powder Company, San Francisco, Cal., were re-elected as vice - presidents. New directors elected for various terms were as follows: Charles Barham, vice-president and traffic manager, Nashville, Chattanooga & St. Louis, Nashville, Tenn.; Roy W. Campbell, manager traffic division, Butler Paper Corporation, Chicago; Floyd O. Dutcher, district freight representative, Baltimore & Ohio, Buffalo, N. Y.; T. N. Butler, traffic manager, Wistar, Underhill & Nixon, Philadelphia, Pa.; B. E. Olsen, traffic manager, McCall Company, Dayton, Ohio; A. H. Evans, traffic manager, American Gasoline Company, Tulsa, Okla., and Miss Emma Kentz, Union Pacific System, Los Angeles, Cal.

Chicago was selected as the location for the next meeting, which will be held some time during April, 1931, while the following meeting, during October of the same year, will be held at Tulsa, Okla. The business sessions of the meeting were well attended, with 325 persons registering. At the banquet tendered to the association by the Traffic Club of Atlanta, 525 were in attendance. Speakers following this dinner included Clifford Walker, former governor of Georgia, who took as his subject "Georgia and the South," and Miss Amelia Earhart, assistant to general traffic manager, Transcontinental Air Transport, who discussed aviation and its place in the general transportation scheme.

Thomas E. Lyons, assistant chief of the transportation division of the United States Department of Commerce, reported that one of the department's publications, "An Industrial Traffic Management Survey," will be ready for distribution some time after December 1. This survey was made in connection with the Committee on Education and Research of the association. Answers to a questionnaire forming a part of the survey show that a large percentage of the firms in important industries maintain traffic managers, Mr. Lyons said.

In speaking on the subject "Railroads and the Business Outlook," Mr. Roberts expressed the opinion that the present business depression, while of a major type, is not as severe as a number of others which the country has suffered. He based this view upon a betterment in the iron and steel market, notably a stiffening of prices for steel scrap; a check in the world wide decline in commodity prices; some improvement in retail trade; an increase in exports during August; better prospects for automobile sales;



A Group of Officers and Directors at the Biltmore Hotel, Atlanta

Those in the group are, left to right: Top row—B. F. McCamey, Southern Hardwood Association; C. B. Hesse, Ohio & Mississippi Transit Co.; J. W. Roberts, assistant vice-president, Pennsylvania; J. M. Fitzgerald, assistant to chairman, Eastern Presidents' Conference; T. C. Burwell, A. E. Staley Manufacturing Company; W. C. Hull, assistant vice-president, Chesapeake & Ohio; P. R. Flanagan, general freight agent, Chicago Great Western; C. A. Swope, general eastern freight agent, Louisville & Nashville, and A. A. Luttrell, commercial agent, Chicago & Alton; bottom row—A. S. Lucas, general agent, Mississippi Central; W. L. Bailes, general agent, Chesapeake & Ohio; T. B. Curtis, general agent, Charleston & Western Carolina; F. A. Doebber, Citizens Gas Company; T. T. Harkrader, American Tobacco Company; H. A. Palmer, Traffic World; W. T. Vandenburgh, commercial agent, Seaboard Air Line, and W. J. Fillingim, general southern agent, New York, New Haven & Hartford.

improvement in building construction prospects; strength in the bond market, led by the railroad issues; cheap money, and an increased number of stockholders reported by many corporations—a sign of investment buying. Mr. Roberts continued in part as follows:

Fundamental conditions of business and finance are very much better in this present period of less than normal business than in any previously recorded major era of similar conditions. Banks today are in absolutely sound condition. Stocks of materials and merchandise in the hands of manufacturers, wholesalers, jobbers and retailers are extremely low. The unemployment situation in this country today is less severe and distressing than occurred in 1921, or following the panic of 1907.

There is a widely held opinion, especially prevalent among railroad men themselves, that the railroads have been particularly hard hit and are encountering more insuperable difficulties than other forms of business; also that they are suffering more than they did on previous occasions of economic trouble. I question whether there is justification for this viewpoint. Railroad receiverships were notable features of the subnormal business periods of the last century. A number occurred in the earlier years of the present century. During the period through which we are now passing, however, not a single line of consequence has been unable to meets it obligations, nor has there even been a suggestion of the imminence of such a disaster. Even dividends of the railroads have thus far been maintained unimpaired, in sharp contrast with many reductions which have been made in industrial and other lines.

Net railway operating income has shown greater relative decreases than gross railway operating income. The average loss this year as compared with last has been about one-third, with no marked trend from month to month, except that March and June appeared somewhat worse than the others, while the first few roads thus far reporting for August show improvement.

During certain months of 1929 a number of roads magnified their reported gross earnings by including non-recurring back railway mail pay. When the earnings of 1929 are recalculated, omitting the back mail pay, the comparisons show that, owing to the operating economies the railroads have been able to effect, there has been since March a steady reduction in the relative loss in net railway operating income as compared with last year. In March, eliminating the effect of back mail pay, the loss stood at 36.4 per cent. By July it had been reduced to 27.4 per cent.

The most important element in the present situation is the unprecendented ability the railroads have developed to control operating costs. This has reached such a degree that we have every reason to believe that it will have a powerful influence not only upon the future of the railroads themselves but upon their ability to render transportation service of the highest character, and in any volume required, when general business activity returns.

In no previous period of notably depressed business and reduced traffic have the railroads exhibited anything like the grasp upon the problem of expense control which is in evidence now. The saving, moreover, is being effected without permitting deterioration of the properties. It is concentrated upon actual transportation expenses, though naturally maintenance work, while fully adequate to present needs, is less in volume than last year, because reduced traffic makes less wear and tear.

It is perfectly possible that the railroads may relinquish still more of their passenger business to motor cars, chiefly privately owned automobiles. But it will be principally the shorter haul business, much of which has been recognized as unprofitable and much of which has involved considerable net losses. Traffic of this character is to a great extent an interference with the true business of the railroad, which is that of rendering long-distance mass transportation. While the total number of passengers carried, and the total number of passenger miles handled, as well as total passenger revenues, have been decreasing for a number of years, it is widely known that the business on long-distance through passenger trains has more than held its ground, especially where the service has been extended and improved to meet present day demands.

In the field of freight service there is absolutely nothing in sight to check the supremacy of the railroads, save for small shipments over short distances, which may be handled more efficiently by motor trucks, and possibly a small amount of very light freight or express matter which, on account of great value or urgent need, may be moved by airplane at high rates.

Assuming fair treatment by the regulative and legislative authorities, and a willingness on the part of our patrons to allow them fair freight rates in the future—which means in some instances a more remunerative scale than is now in effect—I see nothing to fear in the long term outlook for these properties. They will arise out of present conditions stronger than ever before, and better equipped to meet the needs of the public.

Mileage Rates

In opening the discussion of mileage rates J. Haden Alldredge, chief, transportation bureau of the Alabama Public Service Commission, stated that the policy or at least the common practice of the Interstate Commerce Commission is to extend the application and use of mileage rates. Mr. Alldredge pointed out, by way of introduction to the subject, that the general use of mileage rates in the revision or reorganization of freight structures in the United States represents a sharp departure from the principles upon which previous rate structures have been built.

He enumerated the various arguments advanced against the widespread employment of mileage rates as follows: (1) Mileage is not always an accurate or reliable measure of the cost of transportation service. (2) The use of mileage rates does not give adequate recognition to competitive forces and fails to accord sufficient influence to legitimate rate-making factors, other than the cost of service. (3) Mileage rates restrict the distribution of commodities and retard the fullest development of all sections of the country. (4) Mileage rates prevent the employment of the most economical routes for the transportation of freight. (5) Their use does not promote simplicity in the rate structure or in the publication of tariffs. (6) Experience has demonstrated that mileage rates are unsuited to the movement of some commodities and the extensive use of such rates is the wrong theory of rate-making for a territory of such geographical extent and such diversity of conditions and interests as the United States exhibits.

The advocates of the use of mileage rates maintain, continued Mr. Alldredge, that: (1) The observance of distance in the making of rates is the most practicable way of avoiding unlawful discriminations in rates. (2) The use of mileage rates has a tendency to stabilize the rate structure and enables business to proceed in the course of its normal development without fear of frequent disturbances caused by rate readjustments. (3) Rates made upon this basis have the great practical advantage of being readily understood by the public. (4) Mileage rates have a tendency to check wasteful transportation. (5) The use of mileage scales affords the most practicable basis for harmonizing the various intrastate rate structures of the country with the interstate structure. (6) Distance is the most accurate and reliable criterion yet discovered for determining the average underlying costs of transportation service and furnishes the most accurate measure of the quantity of service rendered.

Mr. Alldredge said that the recent tendency of making commodity rates in direct relation to first-class rates is undoubtedly responsible for much of the criticism of the mileage theory of rate-making. To establish a fixed relation with first-class rates prevents the giving of adequate consideration to the special circumstances that generally surround the movement of particular commodities, and is in reality nothing more than a change in the classification of the commodities.

Government Regulation Responsible for Mileage Rates

Mr. Alldredge was followed by Thomas J. Burke, president of the Southern Traffic League and commissioner of the Charleston Traffic Bureau, who looked upon the trend toward greater uniformity and the use

of distance scales, as the direct result of governmental regulation of the carriers.

"To achieve rate uniformity it becomes necessary to adopt mileage as the basic factor," Mr. Burke said. "Regardless of the principles or considerations governing the fixing of the general level of rates, relative uniformity in their application depends largely on the use of mileage. A statement of the policy of the Interstate Commerce Commission to adopt mileage scales in bringing about uniformity in rates is to be found in its decision in the Southern Class Rate Investigation:

> The normal level of interstate class rates within southern territory should be based upon a distance scale or scales sufficiently extended so that hauls of all lengths will be covered.

It assumes that differences in earning power will to a material extent be cared for by adjustment of divisions or through operation of the recapture clause.

"The Southern Class Rate Case was the first opportunity the commission had to deal with an entire comprehensive adjustment involving a large area or rate territory. The southern case was decided in 1925 and since that time we have had decisions in the Consolidated Southwestern Cases, the Western Trunk Line Class Rates and the Eastern Class Rate Investigation. In all of these cases uniformity in rates was sought and this was attained by a strict adherence to the distance principle.

"The policy of the commission to follow the principle that class rates should be based upon a maximum distance scale is again stated in the Eastern Class Rate Revision:

> The fact is that a distance scale has been the basis of readjustment in every general revision of class rates which we have caused to be made. For the most part these revisions seems to have had generally satisfactory results, and at all events the use of a distance scale has not been a source of complaint.

It must also be observed that the discrimination in commodity rates brought to the attention of the commission has been ordered removed by it by the application of mileage scales. The revision of rates on fertilizer, iron and steel, cement, sand gravel and stone serve to indicate a definite policy.

"If complaints are to be filed about commodity rate adjustments, then it must be evident to all of us that there is no other satisfactory yardstick for a regulatory body to use in measuring alleged discrimination than that of distance, coupled with adjustments for difference in operating conditions. The mileage scale method of making commodity rates undoubtedly circumscribes the activities of producers who seek to market their goods in distant markets, in competition with competitors located closer at hand. The future of the mileage scale, as applied to commodity rate adjustments promises to be a serious problem to shippers and carriers alike."

Discussion on Mileage Rates

Those who took part in the discussion following these two addresses expressed displeasure with the increasing use of mileage rates. C. E. Cotterill, general counsel of the Southern Traffic League, expressed the belief that carrier and shipper organizations are sensing a trend in that direction, to which they are not friendly. In recent years, he continued, there is not a single instance in which the railroads have asserted their right to maintain a lawful discrimination in freight rates. They are yielding to what is said to be a fixed policy of the commission. He said that he had sensed a feeling developing against further extension of the mileage scale policy, and thought it would be helpful if a carrier contested this policy of the commission.

Joseph H. Donnell, general manager of the Tampa Traffic Association, referred to mileage scales as a stable basis of rate-making, although not a scientific one. He said that a mileage system will inevitably curtail long-haul traffic. Something must be done to do away with the mileage basis, or at least modify it, Mr. Donnell stated, adding that it might be a valuable topic for study by individual traffic clubs and traffic study classes.

A. R. Smith, vice-president in charge of traffic of the Louisville & Nashville, looked upon the mileage basis used by the Interstate Commerce Commission not so much as a policy as an expedient. At the same time, he felt that the commission had gone too far in prescribing a mileage scale for certain commodities.

In a short address welcoming the Traffic Clubs to Atlanta, J. A. Perry, chairman of the Georgia Public Service Commission, declared that the time is fast approaching when sincere and conscientious railroad traffic men and shippers will confer around a table to work out their rate problems, rather than by long drawn out rate hearings. He called attention to the useless expense attached to rate investigations and hearings through the incumbency of men with biased minds as members of supposedly fair and impartial governmental bodies.

The report of the Committee on Education and Research contained the information that the matter of establishing a permanent traffic exhibit is under consideration and that at the present time a model of the proposed permanent exhibit is in course of preparation. It is intended to make such an exhibit part of the transportation display at the World's Fair in Chicago in 1933, and then make it available for inspection at colleges and universities where commerce and transportation courses are offered. The report also pointed out the need of shipping administration instruction in university business courses.

Charles Barham, vice-president and traffic manager of the Nashville, Chattanooga & St. Louis, in an address on "The Traffic Study Class," declared that men engaged in the "profession of transportation" have need of the trained imagination that comes from the study of traffic problems on a broad basis, rather than a confined and ingrowing knowledge of the details of some particular phase of the subject. Among the questions suggested as worth study at the hands of the traffic study classes, he mentioned the effect of possible substitution of other facilities for railroads; the question of direct or indirect subsidy from the public purse of various means of transportation; the future of private ownership and operation of rail carriage, and the possibility of public ownership; the effects of political and sectional demands on transportation rates and service; the total costs involved both to user and to the public treasury, in the various forms of transportation; the propriety of using freight rates as equalizers of fortune, opportunity or geography; and the waste in uneconomic duplication of facilities. With these and other like questions pressing for consideration by informed men, Mr. Barham urged the members of the traffic study classes to "get away from the trivial and think in larger terms" of transportation as a whole, and its effect upon American commerce and life.

"The bane of traffic management, and the bane of all management," Mr. Barham continued, "is the man without trained imagination, the man figure-blind, and the man who goes by candle and book and reads nothing not on the printed page. I have little enthusiasm for the study club idea if it is confined to the routine and technique of tariffs and rate-making. If anything, there is already too much routine and decidedly too much

technique. Witness, for example, a tariff, now in preparation, in which about 130 pages of rates will require approximately 600 pages of explanatory matter. But we do badly need study clubs of high type, clubs devoting their time, their patience and their intelligence to the discussion of those important questions that directly and intimately affect our whole business structure.

"My plea then is for study clubs as an indispensable part of every unit of this organization, but clubs dealing with the greater questions of transportation, rather than its infinite detail. The field of inquiry is practically unlimited, for it takes in practically every detail of our social life and social structures as these are now organized. Do not understand me to suggest or imply by these questions any cause of quarrel with other forms of transportation, as such. Each has its place, each deserves to live or die as it fills or fails to meet a just public need. The whole spirit of our national life is opposed to subsidy in any form."

Following Mr. Barham's talk representatives of a number of traffic clubs took the floor to describe methods used in handling their local study classes. In most cases these classes are operated as an auxiliary of the parent traffic club. One club, that in St. Louis, has obtained the cooperation of the superintendent of public schools and two night classes have been organized under the supervision of two high schools. Luncheon programs of the Kansas City Traffic Club, which include a speaker on or a discussion of a transportation problem are broadcast over a local radio station.

The Industrial Traffic Manager

On the second day of the meeting G. Lloyd Wilson, professor of commerce and transportation of the University of Pennsylvania, presented an address on the subject of "The Industrial Traffic Manager." Mr. Wilson pictured the industrial traffic manager in the modern sense as more than a shipping supervisor, rate expert and claim preparer, and placed him in the category of a "qualified distribution specialist." A continuation of his remarks in part follows:

There was a time when some people regarded an industrial traffic manager as a man who had spent sufficient amount of time inside the railroad or steamship business to know what to do to get low rates and other concessions when he got on the outside working for an industrial concern. This conception does not do the proper honor to some of the pioneer industrial traffic managers, nor does it do justice to the modern industrial traffic managers who supervise and direct the transportation interests of industrial concerns which are fortunate to have their own services. The industrial traffic manager fits into the galaxy of industrial specialists as an expert who assists in increasing the efficiency and economy with which goods are produced, distributed and consumed.

An industrial traffic manager can not bottle himself up in his own industry and isolate himself from others. Traffic managers must co-operate with the fellow members of their profession through the National Industrial Traffic League, the Southern Traffic League, the shippers' regional advisory boards, shippers' conferences and other organizations of industrial and commercial traffic men. They should co-operate with the traffic and operating officers of the carriers through contacts established in local traffic clubs, in the Associated Traffic Clubs of America, and in the shippers' regional advisory boards.

If the profession of industrial traffic management is ever to amount to anything several things must be done by individuals and groups such as are represented here. The findings of the Department of Commerce Survey must be brought to the attention of industrial and commercial executives. Traffic men must broaden their horizons and extend their knowledge of traffic practice, distribution economics and public utility law in order to prepare themselves for larger fields of service. Adequate instruction must be provided for those seeking to enter the field by the colleges, universities, technical schools, and extension and correspondence courses. A high standard of ethics must be maintained. Steps should be taken to regulate admission to the field through the organization of a national body of traffic managers.

J. M. Fitzgerald, assistant to the chairman of the Eastern Presidents' Conference, in a short talk on the subject of "Why the Association?" presented in a few reasons, answering his own question, the place the Association Traffic Clubs should occupy in relation to the individual member clubs. H. A. Palmer, editor and manager of the Traffic World, supplemented Mr. Fitzgerald's address with the thought that one object of the association is to place the "profession of traffic" on a plane where it belongs. He felt that business men should know the value of adequate men in traffic departments and develop men for those positions. Mr. Palmer also stated that there are certain matters, such as politics in rate-making and appointments to the Interstate Commerce Commission, on which the Associated Traffic Clubs should take a firm stand in action.

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New Club-Lounge Cars for the Monon

TWO new club-lounge cars, No. 108 and No. 109, operated in "Hoosier" trains of the Chicago, Indianapolis & Louisville between Chicago and Indianapolis, Ind., were rebuilt from steel-underframe, steel-lined and steel-sheathed coaches weighing 143,000 lb. and 70 ft. 8 in. long over the end sills. The entire rebuilding and finishing was done at the railway company's main shops at Lafayette, Ind., with the exception of the interior decorating and furnishing, which was done by Mandel Brothers, Chicago.

The main compartment of these cars extends nearly the full length of the car, and is treated as one room. A card

Looking Toward the Opposite End of the Car

The Monon Club-Lounge Car—Card Sections Are Shown in the Center and a Radio in the Background

section is located on each side of the car at the center. In one end of the car is a buffet or kitchen approximately 9 ft. in length, including the refrigerators, for serving light refreshments. The opposite end is arranged in a lavatory and toilet, taking up approximately 9 ft. of the length of the car. The wall and ceiling finish is in diverse soft shades of light buff, tans and ivory. The wall finish is done in panels in these shades and trimmed in mouldings of light American walnut. The lighting fixtures of special design and in satin silver finish, furnished by the Safety Car Heating and Lighting Company, effect a pleasing contrast in the color scheme. The center fixtures are a combination fan and light-pendant cluster. The wall-bracket fixtures are in imitation of hammered silver and consist of an escutcheon plate with double-arm lights with parchment shades, one on each pilaster. The lights and fans are controlled from a 12-circuit panel in a cabinet on the wall of the buffet end. The fan control is arranged for three speeds of the fans. Two exhaust fans are installed in the deck, one on each side at the center of the car.

The furnishings include settees and chairs, arranged on each side of the car, upholstered in various patterns and colors of chaise mohair plush material. The card-section seats are covered with silver swirl-grain leather. Specially-designed window shades are furnished to match the color scheme. The carpet is a Bigelow Wilton rug, colored in subdued greens and tans on a foundation of Ozite cushion.

A Majestic radio is installed at the buffet end with an auxiliary speaker on the bulkhead at the opposite end. The radio and speakers are controlled by a special switch panel on the wall and in close juxtaposition to the cabinet. Four small tables with library lamps are placed in the arrangement, together with ten combination serving trays and smoking stands in the same finish as the light fixtures. The four library lamps have especially artistic parchment shades. One side is a copy of the famous Hoosier painting "Then and Now" which appears on the face of all menu cards used in the Monon dining cars. It depicts an Indian camping on the trail, broiling his meat on a spit; in the distance is seen the "Hoosier Limited." On the other side is shown one of John T. McCutcheon's famous Hoosier cartoons. A desk is placed at the lavatory partition.

The lavatory is finished in the same general color scheme as the main compartment and is fitted with a porcelain wash-stand, water-cooler, etc. The panel in the toilet-room door is a French mirror. The buffet is finished in white enamel and fixtures to provide the greatest efficiency and cleanliness. The table tops are Monel metal and all trimmings are nickel plated. Large refrigerators are arranged for outside icing. An annunciator system is provided in the car, with a button on each pilaster.

The floors in the kitchen, lavatory and vestibules are covered with heavy rubber tiling cemented on. A 32-volt, 450-ampere-hour battery furnishes electricity for lighting the car and operating the radio, the latter being accomplished through a Diehl transformer generator-set which provides 110-volt alternating current for the radio. The radio antennae is on the roof of the car.

Alma Draft Gear Tested in Passenger Service

Continuous gear separates the draft and shock-cushioning functions—Employs volute springs

A CONTINUOUS elastic draft and buffing gear to which the car body is elastically attached through suitable cushioning springs has been subjected to service tests on a number of passenger cars in the United States for the past year and a half. This draft gear, the principle of which is of Austrian origin, is being developed in this country by the Alma Draft Gear Corporation, New York.

Unlike the draft gears customarily employed in American practice, the cushioning springs of the Alma gear, which protect the car body against shocks, are but slightly affected by the forces transmitted through one car to those following it in a train. These springs cushion and transmit the force required to overcome the resistance of the car to movement and take up the momentum of the car in case the car is subjected to a sudden change of velocity either by the action of the brakes or in case moving cars strike standing cars as in switching service.

Elastic action of the gear itself, as distinguished from its cushioning action, serially reduces the violence of the force acting on succeeding cars in the train and also provides the serial action necessary to the smooth starting of heavy trains. In this respect the Alma gear functions similar to conventional draft gears, but with less lengthening or shortening of the distance between the coupler faces of each car.

Construction and Operation of the Alma Gear

Fig. 1 schematically illustrates the construction and method of attachment of the Alma gear to the car underframe. The continuous rod A consists of two rod sections. Each section is connected on one end with the coupler shank by the bolt B. The other end is provided with a compression head C located in the middle piece D. Each rod section consists of several parts which are connected by nuts G. The volute cushioning springs, known as frame springs, F_1, are supported between followers against stops on the center sills. The rod spring F_2, also a volute spring, is independent of the underframe and its function is to provide elasticity in the rod itself and also to supply the needed amount of controlled train slack. The initial compression of these springs is of such amount that a train of 10 to 12 cars starts as a unit, without serial action.

The travel limitations for the frame springs F_1 are indicated at N_1 and N_2; M_1 and M_2 are the travel limitations for the rod spring F_2. The maximum amount by which the length over the couplers is shortened under buffing forces is indicated by M_1 and the maximum amount by which it is increased under pulling forces by M_2.

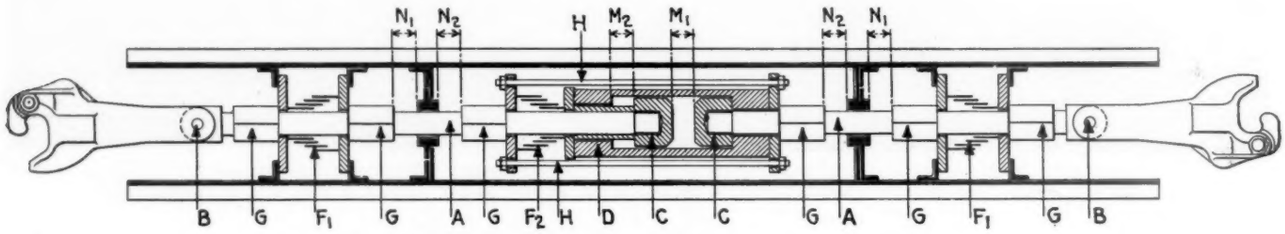
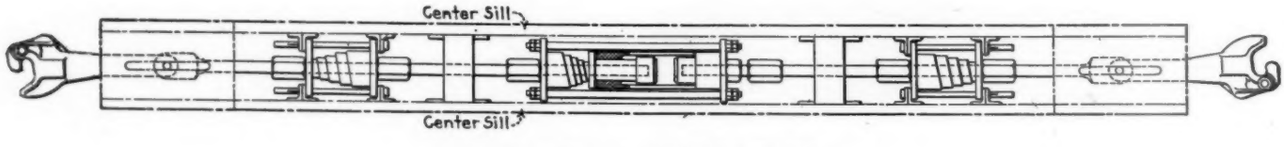
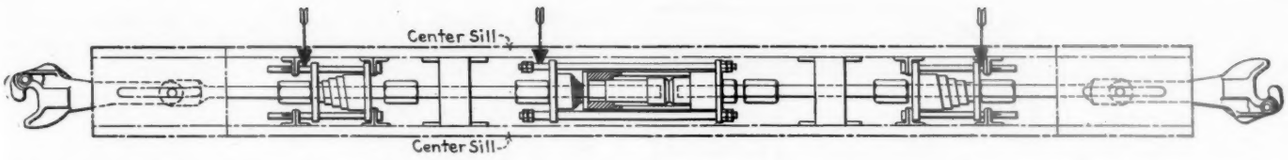


Fig. 1—Schematic Drawing of the Alma Gear Installation

In the event that pulling or buffing stresses are exerted on the car which are greater than the initial compression of the rod spring F_2 plus the initial compression of one of the frame springs F_1, but smaller than the maximum pressure for complete closure travel M_1 or M_2, then the draft gear will be lengthened or shortened by an amount smaller than M_1 or M_2. By that lengthening or shortening a corresponding combined compression of the two frame springs F_1 will take place which adds to the energy capacity of the gear in itself. The resistance of the car to movement imparted by the pulling or buffing force acting on the gear will be taken up only by one of the springs F_1. Since the maximum limit of the elastic movement of



The Alma Gear in Unloaded Position



The Action of the Gear Under a Violent Buffing Shock from the Left—The Movement of the Gear Is That Taking Place on the First of a Group of Cars

the rod spring is not great and, therefore, only an inconsiderable part of the force transmitted through the continuous gear is delivered to the underframe through the frame springs, the effect on the underframe is practically negligible.

In case pulling or buffing forces are exerted on the car which are greater than the closure loads of the rod spring, the draft gear will be lengthened or shortened the maximum amount M_1 or M_2; the part of the pulling forces exceeding the maximum pressure of the springs will be transferred by the middle piece D, the part of the buffing forces exceeding the maximum pressure of the springs will be transferred directly by the rod compression heads G. The middle piece is thus relieved from excessive buffing stresses. The resistance of the car, as in the previous case, will be taken up only by one of the springs F_1.

So far, cases have been considered where pulling or buffing forces are exerted on one car or on a group of cars. In cases where the momentum of the moving car produces buffing impacts on the draft gear, such as when the moving car strikes a group of standing cars, the frame spring F_1 at the front of the moving car will be totally compressed if the speed of the impact is great enough, while the frame spring F_1 at the rear and the rod spring F_2 will be compressed so that a balance will occur between them. As a matter of fact, all the springs take a share of the work. The greater the combined capacity of the springs, the smaller the excessive uncushioned buffing force which will be taken up by the underframe. Since with the Alma device the travel of the frame springs F_1 has no influence on the lengthening or shortening of the train, this travel can be chosen with a view to securing as large a gear capacity as is wanted, without sacrificing softness of action as is the case when a high capacity is attained within a short travel.

With the non-continuous draft gear only the gear in the forward end of the car comes into action with the run-in of a single car, while the gear in the rear remains inactive. Since these gears have only a small travel, the capacity is relatively small and the excess uncushioned buffing forces acting directly on the car are large. The capacity of each gear in the American freight car is, on the average, about 21,000 ft. lb. with the Alma device as designed for freight cars the capacity amounts in the same case to about 67,000 ft. lb. and can be increased over this amount if necessary.

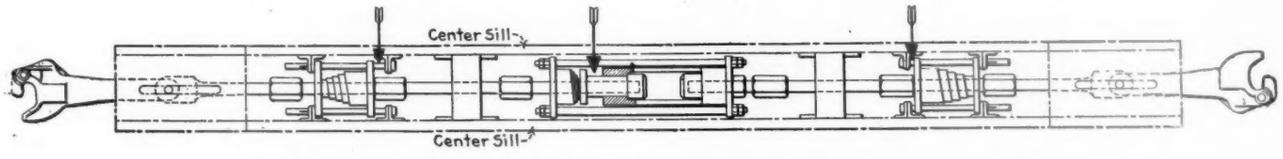
For passenger cars, which are not subjected to switching in hump yards, a capacity of this large amount is, of course, not necessary. In this case the travel of the frame springs, as well as their closure force, is considerably less than for freight cars. The gear capacity of the passenger cars amounts to only about 10,000 ft. lb. Tests indicate that this amount is sufficient.

Passenger-Car Tests

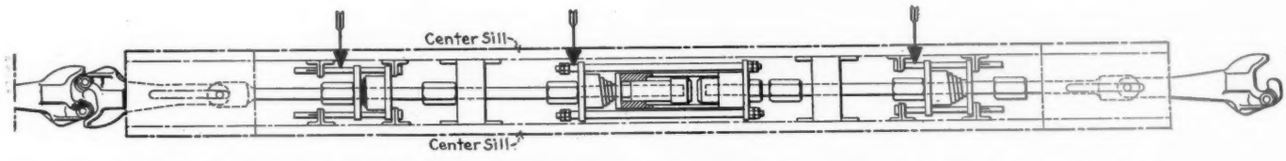
Tests were conducted with twelve Pennsylvania passenger cars equipped with the Alma draft gear in April and May, 1929. Comparative tests were made with two trains. One test train generally consisted of the twelve Alma-equipped cars, though in some tests this train consisted of eight Alma cars and three Pullman cars, the latter cars (in the rear of the train) being equipped with conventional draft gears.

The cars in the second test train were of the same construction as the Alma cars, but equipped with the conventional draft gears. All cars were equipped with roller bearings.

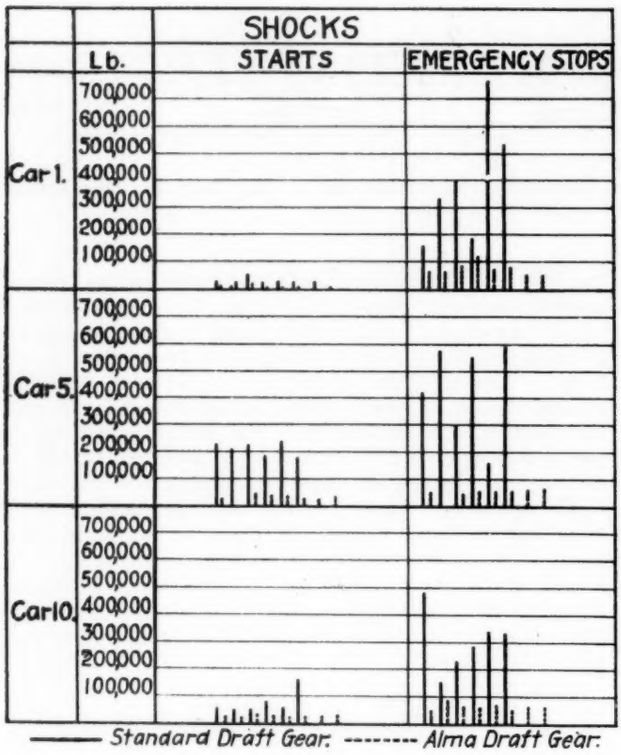
Comparisons were made both in starting and stopping. In one series of tests each train of passenger coaches was subjected to six rough starts and to six emergency stops from a speed of 20 m.p.h. Two additional stopping tests were made from speeds of 10 m.p.h. In the starting tests the brakes on the two rear cars were set and blocks placed back of the rear car. The slack was then bunched, the train started as roughly as possible,



The Effect of a Violent Pull from the Left on the First of a Group of Cars



The Movement of the Gear in a Violent Run-in of a Single Car Against an Obstacle at the Left



A Graphic Comparison of the Shocks Recorded in Starting and Stopping Tests

and then the brakes on the rear cars were released.

The first, the fifth and the tenth cars of each train were equipped with Endsley dynamometers by which the accelerating or decelerating forces were measured.

The average results of the starting tests are shown in a table.

A Comparison of the Average Shocks in the Rough-Starting Tests

	Alma Gear		Standard Gear	
Car	Force, lb.	Per cent	Force, lb.	Per cent
First	9,683	100	25,417	263
Fifth	36,800	100	210,700	573
Tenth	30,250	100	79,300	263

In another table are set forth the average results of the six emergency stops from 20 m.p.h. in which the shocks at the middle of the train average about eight times as severe in the case of the train equipped with standard draft gears as in the case of the alma train.

Average Results of Emergency Stops

	Alma Gear		Standard Gear	
Car	Force, lb.	Per cent	Force, lb.	Per cent
First	81,130	100	395,167	487
Fifth	53,400	100	432,300	810
Tenth	64,333	100	305,800	475

A graphic comparison of the shock-producing forces in each of the starting and stopping tests is shown in the chart. It will be seen that in one of the emergency stops a force of over 750,000 lb. was indicated on the first car of the train equipped with standard draft gears, while in the fifth car of this train three of the stops produced forces approaching 600,000 lb. In only one of the tests—an emergency stop—was a force of over 100,000 lb. indicated in any of the cars equipped with Alma draft gears.

Coupling Tests

Among other tests to which these cars were subjected was a series in which a single moving car was allowed to strike a group of five standing cars arranged in various combinations with respect to the draft gear equipment. These combinations are as follows:

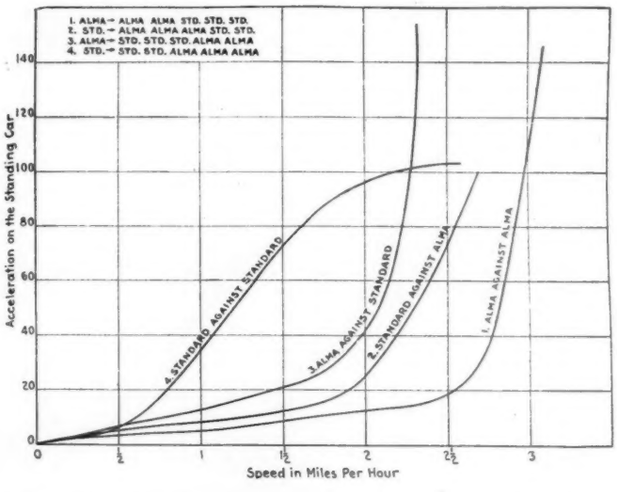
(a)—A standard car against two standard and three Alma cars
(b)—An Alma car against three standard and two Alma cars
(c)—A standard car against three Alma and two standard cars
(d)—An Alma car against two Alma and three standard cars

The result of these tests is shown graphically in one of the drawings, and indicates that coupling shocks increased in severity with conditions in the following order:

1—Alma equipped car striking an Alma equipped car
2—A car with standard draft gear striking an Alma equipped car
3—Alma equipped car striking a car equipped with standard draft gears
4—Car equipped with standard draft gears striking another similar car

With speeds amounting to 2 m.p.h. no violent shocks occurred where the struck and striking cars are equipped with the Alma gear. In this case, where the draft gear became rigid at a speed of about 2.7 m.p.h., an acceleration of over 20 ft. per sec. was not reached at speeds of less than that amount. Practically no acceleration of over 32.2 ft. per sec. occurred at speeds below 2 m.p.h. where either of the cars immediately involved was equipped with the Alma gear, while in the case where both the striking and the struck car were equipped with standard draft gears, this acceleration was reached at about one half that speed and increased until at 2 m.p.h. it was about three times as great as in the case of the Alma car striking the car with standard draft gear, which is the most unfavorable of the three cases involving Alma equipped cars.

In the starting and stopping test runs, aside from the records of forces determined by measurement, the difference between the shocks in the two trains was clearly evident to those riding them and the results indicate an almost complete absence of shock in cars equipped with Alma gear, even under conditions of extremely rough handling. The performance of the Alma gear indicates the possibility of the solution of rough handling by employing a draft column which is continuous throughout the train, and to which each car is attached through cushioning springs, which may be applied either with or without friction elements.



How the Rate of Acceleration of the First Standing Car Varied with the Speed at Impact in the Coupling Tests

A. C. L. Train on James River Bridge, Richmond, Va.—Photo by Atlantic Coast Line Railroad

Passenger Officers Hold Busy Session at Atlantic City

Seventy-fifth anniversary meeting marked by thorough discussion of wide range of subjects

THE American Association of Passenger Traffic Officers held its 75th Anniversary meeting at the Hotel Haddon Hall, Atlantic City, N. J., on October 7-9. Discussions of important questions concerning passenger traffic departments were extensive and thorough and the docket of subjects to receive attention was exceptionally heavy. The topics most discussed, of course, were proposed methods of combating the constant decline in passenger revenues. Speakers at the annual banquet of the association held at the Hotel Traymore on October 8 were Sir Henry Thornton, president of the Canadian National; A. J. County, vice-president, Pennsylvania; J. V. Hare, secretary, Reading; C. H. Stein, assistant to president, Central of New Jersey; C. H. Mathews, Jr., general traffic manager-passenger, Pennsylvania; Mayor Bachrach of Atlantic City, and the president of the local hotel association. Other speakers from without the organization who addressed its sessions included Ivy L. Lee, public relations counselor of the Pennsylvania, J. Murray Gibbon, general publicity agent, Canadian Pacific, and representatives of two aviation lines which have traffic arrangements with railways.

Officers for the ensuing year were elected as follows: President, C. H. Mathews, Jr.; vice-president, A. D. Bell, passenger traffic manager, Missouri Pacific; and secretary, W. C. Hope (re-elected).

Presentation of Gavel

Following the opening ceremonies and addresses of welcome from local authorities, the retiring president, H. H. Melanson, assistant vice-president, Canadian National, was presented with a gavel, a custom of long standing with the association, the presentation being a gift from the territorial passenger association of which the retiring president is a member. In this case the donor was the Canadian Passenger Association and the presentation was made by C. P. Riddel, general secretary and treasurer. The gavel contained wood from two trees from Mr. Melanson's boyhood home in New Brunswick, wood from the school building which he attended as a boy, metal from the first two locomotives to operate in the Maritime Provinces, a Yukon nugget and perhaps a dozen other woods from various parts of the world symbolical of episodes in Mr. Melanson's life.

In view of the fact that the meeting marked the diamond jubilee of the association, the roll was called of the membership of the association for the years 1855, 1880, 1905 and the present year. There were no responses to the rolls of 1855 and 1880, although a letter of greeting was received from one of the 1880 members who is still living. Following this the secretary read a paper, "75 Years Young," which was prepared by Edward Hungerford, assistant vice-president, New York Central, in which the history of the association was outlined. (A much briefer historical sketch of the association's history appeared in the *Railway Age* of March 8, 1930, page 586.) Mr. Hungerford's paper was available in pamphlet form and was distributed to the membership present.

Reports of Standing Committees

Brief reports were presented by the executive committee, the committee on association ticket paper, the joint committee with the Railway Accounting Officers As-

sociation, the committee on standard forms for interline tickets and the committee on the official digest of fares and divisions. The committee on adjustment of disputes relative to division of passenger fares recommended that it be abolished, since no subjects had been referred to it for a number of years, and this action was taken by the association. The reports of the committees on commercial aviation and motor coach services and competition, of which C. H. Mathews, Jr., and E. D. Osterhout, passenger traffic manager of the Reading, respectively, were chairman, were then presented. The report presented by Mr. Mathews was a detailed analysis of the development of air transport from a railroad point of view and an abstract of it will appear as a separate article in an early issue of the *Railway Age*. The report on motor coach service and competition follows:

Report on Motor Coaches

We now have as a competitor a complete transportation system which has made marked strides in the past year. Railroad men may no longer look upon the motor coach with amusement, resentment, or as an obstacle to progress. With a rapidity almost overwhelming, motor coach transportation has grown in a few years from scattered, haphazard trips between neighboring towns into a nationwide network of highway service. The coach operator of only a short time ago who drove his own vehicle has almost disappeared, and instead we have numerous large companies, divided in railroad fashion into operating, traffic, mechanical, legal, and other departments, headed by experts. Today nearly every coach line is either part of a large system, some of which are national in scope, or has traffic relationships so that through tickets are available from nearly every point of consequence to nearly every other point. Through time tables, stop-over information and other literature are available on all sides.

Improved Management Builds Confidence

Motor coach transportation has reached a much higher standard due to this improved management. Better equipment, more reasonable speed, reliable schedules, and rigid tests for drivers, coupled with greater watchfulness by highway police have had their practical and psychological effect upon the public. The animosity of the automobile driver against the motor coach is dying out. In fact, the present day autoist objects more to the slow moving truck than to the faster motor coach. The American public apparently has definitely accepted the motor coach as a factor which fits in with the national trait of everlastingly "going places."

The past year has seen a marked improvement in motor coach terminals. Better facilities are available in nearly every city. Patrons need no longer wait upon the sidewalk, exposed to the weather, but can obtain information, purchase tickets, and board coaches at a thoroughly modern station, with all collateral facilities, including waiting rooms, lunch counter, toilet rooms, news stand, and other appurtenances of a railroad station. These new terminals serving several routes in all directions usually advertise the destinations and fares rather than the operators and thus overcome a handicap previously experienced. The public had already accepted, as a fact, that the motor coach is cheaper and more frequent, but because of the newness of the service did not remember the name of a particular operator to the desired destination, nor the starting place, resulting in confusion and consequent loss of traffic.

"Growing Pains" Subsiding

Motor coach transportation is, of course, suffering from its own growing pains, such as rate cutting, excessive commissions to agents, etc., but during the past year the industry has taken steps toward placing its house in order, as indicated by the following quotation from a committee report to the National Association of Bus Operators:

> The remarkable growth of the bus industry in the past few years and especially in long-haul transportation, has brought with it, necessarily, attendant abuses which are prevalent in any fast-growing industry. It is the opinion of your Chairman and the Committee that a code of ethics should and will ultimately be adopted by the Association for the industry to govern traffic activities.
>
> It is the Committee's thought that its determinations as herein presented may become the basis of such a code to be hereafter adopted.

The last Congress again failed to pass legislation, with the result that interstate motor coach transportation continues to be conducted in an unrestricted manner as heretofore. All interested in the subject, including the railroads and the motor coach lines, seem to have joined whole-heartedly in an effort to obtain a suitable bill passed in the next session. The railroad passenger fraternity is reminded that federal legislation may be a two-edged sword in some respects. All existing interstate motor coach lines will undoubtedly be legally enfranchised. While further new lines may not come on the scene indiscriminately as heretofore, present operators may greatly improve their service, consequently there is no assurance that we will not be confronted with an actual increase in motor coach trips. While here and there a few weak lines may disappear, there is a general feeling among the present strong operators that with federal protection against unwarranted competition they will attract new capital, resulting in still further improvements in terminals and other facilities. Of course, the unequal fundamental condition governing the two operations will continue. The railroad will still supply and maintain its own roadbed and pay huge taxes, while competing with the publicly owned and maintained and signaled roadbed of the motor coach.

An Oversupply of Passenger Service

With the combination of the automobile, railroad, and motor coach passenger service is available greatly in excess of the requirements of the public. Of the three, the railroad, while still the most powerful land carrier (which it will undoubtedly always be) is in a somewhat vulnerable position as it cannot sidestep the issue. The railroad has a heritage of a century of progress in transportation. During most of this time it had a virtual monopoly in the field. Within recent years the automobile has become part of the equipment of nearly every family and has made deep inroads into this former traffic; and what is left is being divided with the motor coach. No class of traffic is absolutely immune. Suburban, short haul, long distance, individuals and groups are attracted to the automobile and motor coach. The railroad has reached a high degree of perfection, but the public is not attuned, or is indifferent, to its service. The decline in traffic is steady. During the past year this question has been given exhaustive consideration. Careful investigations have been made; masses of statistics accumulated, and numerous experiments conducted. The best minds of the railroads, from the chief executives down, have been devoted to a solution, but as yet no general change of fundamental practices has been made.

Three Classes of Passenger Officers

In considering the subject, railroad passenger men have divided themselves into three camps, which might be named:

"Stand pat"
"Fight"
"Coordinate";

none of which has arguments so convincing as to satisfy the others.

The first group, which by far is the strongest numerically, has every precedent on its side. It is argued that during this period of evolution the revenue from regular railroad travel should not be jeopardized in the interest of a problematical amount of new traffic; that any action sufficiently drastic to attract the motor coach passenger back to the railroad will in the long run result in further decreases in total revenue. They are impressed with the possible ultimate results to the entire passenger fare structure of any attempt to wear down or exterminate the competitive motor coach. They believe we should confine ourselves to continued improvement and refinement in service and facilities particularly for the long-distance passenger.

The second, or belligerent group, take the opposite position. There is much logic in their view that we should utilize this perfect railroad transportation machine which took a century to develop, and adopt every means at our command to regain lost ground. It is contended that our backs are to the wall and we are entitled to use extreme measures, even to a sharp reduction in coach fares.

Low Fare the Motor Coach's Chief Attraction

Their argument, that the lower fare is the chief attraction of the motor coach, cannot be denied. The motor coach people themselves know this, as illustrated in the following comment from a report of a few days ago of the legislative committee of the National Association of Motor Bus Operators:

> As to the matter of reasonable rates, while it is recognized that any regulatory measure would probably have included some measure of rate control, nevertheless, the facts are that the rate of fare charged by motor bus carriers is universally lower than that of rail carriers. While it is a fact that some traffic is attracted to the motor bus by virtue of its cleanliness, its flexibility and opportunity for highway scenery, etc., yet, it is also true that a large percentage of its patronage is attracted by the low fares offered. The tendency is to continue to lower these fares rather than raise them. The motor bus has a natural competitor in the private automobile and as long as there are twenty-five to thirty

million private automobiles plying the highways, there will be no need for any legislation or regulation to compel a continuance of these low fares, as this is a matter which will be amply controlled by economics.

The third group believes that rail and highway service is partly complementary, partly distinctive, but wholly susceptible to beneficial co-ordination. Most railroads which have entered the motor coach field originally adopted it as a means of replacing poor trains. Several of these railroads have since expanded to a broader field of motor coach transportation, now operating lines paralleling their main lines and supplementary to express train service. This was not done for the purpose of suppressing motor coach service, which undoubtedly would not be tolerated if attempted, but rather with the belief that a rational, logical combination must take place, utilizing the advantages of rail and road service, and discarding the obsolete or useless parts of each. A new balance will result in the general interest of the public and the railroad. Thus the public appetite for motor coach service is satisfied. It is offered the choice of rail or road service under the direction of a management animated with the traditional spirit of dependable service. The continued functioning of the railroad as the chief passenger agency in its area is assured. Investment is safeguarded, and the chance of outside ruinous competition is greatly minimized. In such cases it would be difficult for an operator contemplating an extravagant or unwarranted additional service to prove public necessity and convenience in the face of a satisfied public.

Joint Advertising—Improved Service

D. M. Bowman, passenger traffic manager, New York Central, presented the report of the Committee on National Publicity and Advertising. He stated that the Committee had had two meetings but had not succeeded in reaching a general agreement that the railways should undertake a joint campaign of this character. He said that his committee had been approached by advertising agencies and by various other sales organizations with ideas varying from giving merchandise coupons with ticket sales to a popularity contest to be conducted in motion picture houses. The basis for the failure of all members of the committee to agree on the advisability of a joint advertising campaign, appeared to be some feeling that such effort might detract from public attention to individual lines which had been built up at considerable expense, by advertising campaigns heretofore conducted.

Some confusion seemed to exist in the minds of some of the delegates as to just what was contemplated, under this subject, and it was pointed out that there were two entirely different phases of joint railway advertising—one, joint advertisements publicizing a common service such as an excursion and, the other, a campaign aimed at strengthening the railroads' position in competing with other forms of transportation. It was also suggested that joint and competitive advertising were separate and distinct and that one need not in any way interfere with the other. The railways might consistently advertise jointly and direct business towards the railways in general, but they would still desire to maintain their competitive advertising as at present in their distribution of the business among themselves. The opinion was also expressed that the railways, before they started to advertise jointly, should decide just what they were going to sell and what the price should be. It was voted to refer the question to the American Railway Association for its consideration and to continue the subject on the docket, refering it to the territorial associations.

The reports of the various standing territorial committees were presented in the form of a 31-page printed booklet in which each territorial committee gave a brief historical sketch of its railway development, particularly from the passenger traffic standpoint, in its own territory.

Do De Luxe Trains Attract New Business?

The subject of the effect on business of improved passenger train service and equipment was thoroughly discussed. F. S. McGinnis, vice-president, system, passenger traffic, of the Southern Pacific, told of the increase in business which followed the opening of its shorter line to Portland and the operation of a fast train at a nominal extra fare. One member cited an instance of two points between which five trains are operated, one being of de luxe character and operating at high speed, which carries 30 per cent of the traffic handled by all five trains. The question was raised as to whether de luxe trains actually bring in new business or just re-distribute business already moving by rail, taking it from slower trains or from competing lines. The opinions expressed in answer to this question were not in complete accord, positive evidence being offered in one case of an increase in total business. The Pullman Company was highly praised for its activity in consistently improving its equipment, these improvements being credited for retention by the railroads of considerable business that they might otherwise have lost. The plea was made by one of the members for greater attention to "secondary" main line trains, i.e., trains operating between important centers at fair speeds and handling a considerable volume of traffic, but without any luxurious facilities whatever beyond simply day coaches and standard Pullman sleeping cars. The fast daytime de luxe all-coach trains operated between commercial centers by several roads were reported on enthusiastically. One company reported a consistent increase in the patronage of a train of this character which is earning gross revenues of $5 a train-mile.

Faster Speeds Increase Revenues

The passenger traffic manager of another company which in recent months has made important improvements in some of its passenger train schedules reported that these trains were doing an increasing business without apparently drawing any considerable traffic from other trains. The problem of doing away with the dirt and uncomfortable heat of summer travel was dwelt on extensively, the several roads which have placed in operation equipment designed to maintain equable temperatures while excluding dust and cinders reporting progress. The problem it appears is feasible of solution but the equipment is expensive. There is reason to hope, however, that this expense may be reduced. Sir Henry Thornton, in his address at the association's banquet, likewise stressed the point of improving the comfort of travel by endeavoring to eliminate the evils of dirt and excessive heat. He said that it was desirable that long distance train service should approach the trans-Atlantic steamers in facilities for comfort.

The subject of observation cars of the sun-room as against the open-end type was introduced by A. Cotsworth, Jr., passenger traffic manager, Chicago, Burlington & Quincy, whose remarks follow in part:

Open vs. Closed Observation Cars

Undoubtedly the open observation platform would be preferable on a well-oiled roadbed in Florida or Southern Texas, but in regions of varying climatic conditions, there is much to be said in favor of the sun-room or enclosed end, because it certainly has the effect of making usable the full capacity of the car throughout the entire year.

It was in 1909 that the enclosed rear platform was introduced, four lounge cars of that design being placed in service by the Burlington between Chicago and Denver. The so-called sun-room was seven feet long, and the framework was made very light so as to obstruct as little as possible of the view. The door at the extreme rear was rather narrow, and there were no diaphragm plates, there being no expectation of ever handling any other cars behind it. By reason of the narrow door, the two rear windows were of unusual width and they, as well as the two windows on each side—all of good height—were made to drop down into the casing. No screens were provided, nor were steam pipes carried out there. Six chairs were provided, with leather seat, arms, and comfortable back, but sufficiently

small and of sufficiently light construction to permit of their being moved about much the same as camp chairs or stools are moved about on the open platform.

They were popular from the first. It soon became evident that the greatest amount of comfort could be had by leaving the rear windows closed, though in hot weather everything was opened up during the reception of passengers at the initial point.

Within recent years the use of this sun-room has become quite general, and there have naturally been many changes in the original idea, some of which I fear do not constitute an improvement. In many cases the windows are smaller and open only part way; the rear windows are often stationary; the rear doors of the usual width, with heavy framework, and in some cases have the usual vestibule diaphragm plates. Screens have been added which, while keeping out some of the dust and flies also obliterate the view. Steam pipes have been added which, while providing comfort in cool weather, leave no place on the train for fresh air. The chairs are usually of a size and pattern which require that they remain backed up against the side windows.

Minimum of Framework

As indicated at the outset, the chief value of the enclosed rear platform is the fact that in that way the full capacity of the car is made available for use under all climatic conditions. It is the same principle which has resulted in the enclosed decks on the ocean liners, and by the same token we find a great many more sedans than touring cars. But to be successful, it seems to me important that as much as possible of the "open" idea be retained by having the minimum of framework for the sun-room door and windows, and that the latter be allowed to open to their extreme height, and that chairs of a size and pattern be provided which will permit of their being moved about at will. Steam heat is necessary if the space is to be used to any great extent during cold weather, but there can be less radiation. Screens are debatable. Of course, there should be a separate electric light control because there is often scenery that is worth seeing by moonlight.

The objections we have heard are three-fold. The flagmen do not like them, but the reason is obvious. They must traverse an additional car length, and it is not so easy to adjust the tail lights. Some passengers have objected on the ground that the open observation platform furnishes a means for getting fresh air enroute, but an answer to that is that the air on the rear platform of a rapidly-moving train is seldom devoid of dust, and another answer is that the average fresh air "fan" also wants exercise, so he is going to get out at division stops anyway. The third objection is that the brass railing of an open-platform makes for a more imposing appearance. That is true, but it seems to me that our concern should be more for the comfort and pleasure of the passenger who is on board than for the impression of the on-looker, but as a matter of fact, this objection, as well as that of the flagman and fresh air advocate, is met by the Yankee Clipper type of sun-room observation car.

Porters Tell of Passengers Preference

The real test of anything is the result of its practical application, and the fact that nine out of ten observation car porters who have had experience with both types will tell you that the majority of the passengers prefer the enclosed end, coupled with the fact that in actual operation the enclosed ends are used by passengers to a very much greater extent than the open observation end, would seem to support the conclusion that all things considered, the enclosed observation end has been a step in the right direction.

The question was raised as to whether or not the next step in the development of the lounge car might not be to give the entire car observation features, permitting smoking throughout and doing away with partitioned-off portions now generally found and it was stated that a number of cars of this design were already in operation.

A paper on the subject of the provision of radio service on trains was presented by G. W. Oliver of the radio department of the Canadian National, which follows in part:

Radio on Trains

The reason for the development of the train radio from the experimental beginning of seven years ago to the recognized place it now holds in the organization is linked up with other similar developments, for from the very beginning of the original radio-equipped passenger train this feature has been supplemented by the Canadian National Railways with a Dominion-wide broadcasting system.

The object of the latter service was for the dissemination of information about Canada in general and this railroad in particular that was calculated to attract the attention of capital, of settlers and traffic, and to enable officers of the company to address the employees, while the train radio service was aimed to provide an unusual and attractive feature for the convenience of passengers.

During the year 1929 our radio equipped cars travelled 6,165,000 miles in Canada and the United States providing approximately 210,000 passengers who took advantage of the service with 77,600 hours of entertainment. Within that period there was an increase of about 80 per cent in the number of passengers entertained as compared with the preceding year, with just a slight increase in number of radio train miles and hours of entertainment provided.

The cost of equipping a typical observation car with radio five years ago was approximately $850. To-day this figure has been reduced to about $600 per car in spite of the more efficient receivers and more permanent and finished installation with resulting improved service.

Extent of Equipment

To-day there are approximately 80, radio equipped and in regular service. This figure includes nine types of cars, made up of both revenue and non-revenue classes. The revenue group covers buffet parlor, solarium lounge, and Pullman Company's parlor and lounge cars. The non-revenue class includes seven private and business cars and two hospital cars.

Included in the revenue group are twenty-four lounge and compartment cars which operate in pairs on transcontinental service and are train-lined for radio. This means that entertainment from a single installation in the lounge is supplied to adjacent compartment cars by means of a suitable interconnecting circuit. This scheme can, if necessary, take care of all cars in any one train.

The service now covers all main line trains of the system including the runs from Montreal to Vancouver, Chicago, Toronto, Ottawa, Quebec, Boston and Halifax and from Toronto to Winnipeg and Vancouver.

To-day train radio in its simplest form does not differ materially from the installation in the home, though the receiving equipment is modified considerably to suit the particular requirements of the service.

Reception

While on most runs reception is fairly consistent and of a quality equal to or better than that in the average home, yet on certain parts of the system such as the Rocky Mountains some difficulty is experienced in obtaining consistent reception. To provide for service along these sections a combination radio and phonograph has been installed so that the radio programs may be supplemented by recorded entertainment. The use of this feature also offers a means of presenting to the traveler special recorded talks describing points of interest along the carrier's right of way or other information of general interest.

Head Phones and Loud Speakers

The use of both head phones and loud speakers has been found by experience to be the most satisfactory arrangement. A headset installed adjacent to each chair provides optional and individual reception obviating the possibility of forcing the entertainment upon passengers who might not desire it.

The use of a single loud speaker near the receiver, which is usually installed in the non-revenue section of the car enables the passengers who desire to listen by this means to do so by sitting in that section of the car which the loud speaker is intended to serve.

The Radio Operator

From the start it was felt that if a suitable standard of service was to be maintained the installation would require the supervision of an experienced attendant. This policy also enabled the department to obtain first-hand information in the form of daily reports covering the performance of the equipment on each car and many practical suggestions have been offered for the betterment of the service by these men. In addition to the regular duties the operators are required to devote their attention to the comfort of passengers while enroute. The knowledge of the route traveled equipping them to iron out many difficulties for the inexperienced. In employing an operator therefore personal qualities have to be carefully considered.

Naturally the employing of an attendant materially increases the operating cost of the service but the return to be obtained from the higher standard of performance resulting from experienced and constant supervision amply repays the carrier not only through improved service but also in lower maintenance costs and higher maintenance standards.

If the present trend towards train-lining for radio of two or more cars in any one train becomes general the services of an experienced attendant is indispensable for his duties then not only cover one car but rather the interconnecting and supplying of proper program service to all cars in the train line.

New Developments

One may visualize to what extent train radio may develop to be of still greater service by considering two recent cases where new uses were to be found for its application in a modified form. The first instance was a request from an important industrial organization for a special train carrying sales representatives to a convention in Canada to be equipped with a sound distribution, or public address system as it is technically termed, so that sales talks could be given from a microphone placed in a drawing room in a Pullman car to an adjacent lounge car. Fortunately experiments had already been conducted with an installation of this kind, so the request could be complied with.

The second case was a request from our dining and sleeping car department for a means of announcing to passengers throughout the train and over the train-lined radio system information concerning train connections and other details that are usually conveyed by car porter or conductor. It was realized of course that such a service could only be effective if all passengers in the body of any car in the train were able to hear the announcement. This meant that instead of providing individual reproduction in the body of the car by means of head phones as is done in the case of radio programs, additional loud speakers had to be cut in so that the information could be conveyed by announcements from a microphone located in the radio car.

A service of this kind is not very difficult to establish and future demands will determine to what extent the expense of additional loud speakers and other apparatus is warranted.

Undoubtedly there will be many uses for a sound distribution system of this kind.

Other Experiments

One or two railways which had experimented with radio installations for the entertainment of passengers reported that their experiments had not met with success and that they had been discontinued. Another line, however, has found the service popular and is extending it to its dining cars and to coaches. The popularity of the service in the coaches was demonstrated by the fact that the end of the car where the radio operates is always crowded while the seats to the rear remain unoccupied. The opinion was expressed, however, that where loud speakers rather than head phones are used there should be some lounge facilities provided to which the radio would not penetrate.

F. S. McGinnis told of the intercommunicating telephone with which the Southern Pacific has been experimenting which enables calls to be made throughout the train and which is proving a great convenience to passengers in securing service throughout the train from the dining car, etc. A paper on the provision of commercial telephone service on moving trains was presented by J. C. Burkholder, chief engineer, telephone and telegraph dept., Canadian National Railways. The mechanical features of this installation were described in the *Railway Age of* May 11, 1929, page 1100, and its installation on two Canadian National trains was announced in an article which appeared in the *Railway Age* of May 3, 1930, page 1053. The following quotations from Mr. Burkholder's paper relate the recent developments in this service:

Telephoning from Trains

Since April 28, 1930, the train telephone system has been operating daily on one train each way between Toronto and Montreal, namely, the "Maple Leaf," leaving Montreal at 9:30 a.m., and the "International Limited," leaving Toronto at 9:00 a.m. Since service was inaugurated there have been no interruptions to calls or circuit time loss due to failure of any of the train telephone equipment. The Bell Telephone Company of Canada recently commented favorably in a printed statement on the quality of transmission furnished by this system, stating that the service was 95 per cent perfect, based on its method of computation. From observations it would appear that the public is also reacting favorably toward the service as a number of our regular passengers have become enthusiastic about the service, and from the nature of their calls placed, are beginning to more or less rely on this convenience.

During the five months in which the system has been in commercial service, a total of 813 calls have been handled, 766 of these calls originating on the trains for various cities, such as Montreal, Toronto, Kingston, New York, Chicago, Detroit, Boston, Philadelphia, Seattle and Atlanta. There was one call placed by a passenger for London, England, the transmission quality of this call being reported as 100 per cent perfect. There were 47 calls for passengers on the trains originating at such points as Detroit, Chicago, Ottawa, Cleveland, Toronto, Oshawa and Montreal.

During the first six weeks of service there were approximately 165 calls originating on the trains and 5 calls originating at various cities for the trains. During the next six weeks there were approximately 152 calls originating on the trains and 11 calls originating at various cities for the trains. Since that time the number of calls in both directions have steadily increased until the average is now approximately 170 calls from the trains and 15 calls from various cities to the trains. The number of calls varies considerably from day to day. On a number of occasions a train has handled as high as 21 calls during a single trip, whereas there have been other times when a train has not handled more than 2 calls per trip. From observations made it would appear that approximately 60 per cent of the calls handled during the first few weeks were curiosity calls, 20 per cent social calls, and 20 per cent business calls. We note from later observations that the number of curiosity calls have reduced to approximately 10 per cent, social calls increasing to approximately 25 per cent, and business calls show a considerable increase, now approximating 65 per cent. This would indicate that the popularity of the service has depended upon educating the public into the fact that it is not necessary to rush to the telephone, send numerous telegrams, etc., prior to boarding the train.

Cost figures covering the development and establishing of service on this initial system is of little value, as the cost of establishing similar service in the United States would be governed by different conditions.

Motor Coaches and Rail Motor Cars

Considerable discussion developed on the subject of the advantages of highway motor coach operation to the railroads. One inquirer stated that he had heard of many instances where the operation of highway lines by the railways had provided operating economies to the railways themselves but, he continued, he had heard of an equal number of cases where the highway operations were not of themselves proving profitable. The testimony of various members who answer this question varied. A number of railways are making substantial net returns from their highway operations. Others are not doing so well from a standpoint of the highway operations alone, but are well satisfied nevertheless since they are thus relieved from operating many unremunerative train-miles. The point was made that it was not wise to form an opinion of the money making possibilties of motor coach lines generally by the results obtained by railroad subsidiaries, since the later were always expected to perform services in connection with their railway co-ordination, from which restrictions independent operators are free. A thoroughgoing report on the subject of motor coach legislation was presented by H. W. Siddall, chairman of the Trans-Continental Passenger Association. The course of legislation and taxation was traced for the past several years and the present situation with reference to the Parker Bill for the regulation of interstate motor coaches was described. As an appendix to this report, there was given in convenient digest form the legislation and taxation policies of each state, answering the following questions: Date and effectiveness of regulatory law; name of commission exercising regulatory authority; to what classes of carriers legislation applies; pre-requisites for operation; general powers of regulatory body; number

of motor coach companies operating; number of vehicles operated; amount of license, registration and other fees; and the amount of the gasoline tax.

R. L. Fairburn, manager, passenger service bureau, Canadian National, presented a paper on rail motor car service in which he traced the development of the rail motor car and its present utilization. Continuing, he said in part:

We have found a great diversity of opinion amongst officials of the various railways regarding the manner in which cost studies should be made up in order to determine whether or not a rail motor car operation would be profitable.

On our own system when making such a study we do not make, nor desire, a comparison between steam train and rail motor car costs, but we do make up the following:

For the steam train—a statement of the direct out-of-pocket costs or additional cost incurred by the railway due solely to the operation of that train, and we do not include therein, overhead, maintenance of way and structures, taxes, nor interest and depreciation on the equipment used in the service.

For the rail motor car, the cost statement includes the direct out-of-pocket costs, plus interest, depreciation and maintenance on the new equipment. We figure on 80 per cent serviceability and that the new operation must produce a return of at least 15 per cent on the new capital investment caused by the purchase of the new equipment.

While I have stated 15 per cent as our figure, we have never really used that figure, as in every case on our own system the economy obtained has been so substantial that the percentage return did not require consideration.

Some lines require 25 per cent return on the new capital, this figure being set at that high point in order to make allowance for undetectable errors in the cost study, and changing conditions which cannot be foreseen.

In inaugurating rail motor car services the railways were faced with the problem of maintaining new types of motive power, and it should be noted that our mechanical staffs have been brought up and have lived on steam, and only too frequently it has been necessary to educate mechanical staff on the maintenance of these new types, and one of the chief difficulties has been that a large part of the maintenance work on these cars requires to be done at night, or at week-ends, when only a limited staff is available. Such difficulties are gradually being overcome due to continued operation of the new motive power, and also to an increase in the number of units operated, and as the days roll by our shop forces are better qualified to do the necessary work.

We have found that while some of our train and engine men do not take kindly to the new units, others have taken a great deal of interest and pride therein and prefer the rail motor car runs to the steam runs, and we have noted a decided preference on the part of our enginemen for this type of service.

Merchandising and Advertising

L. F. Vosburgh, vice-president, passenger traffic, New York Central Lines, addressed the association on the passenger traffic situation with reference to the loss of business to competitive agencies of transportation. It was pointed out that passenger revenues in 1930 will probably be at the lowest point in the past twenty-five years. The belief was expressed, however, that the end of this loss of business was near at hand. A recent article of President Shoup of the Southern Pacific was quoted in which the opinion was expressed that the passenger business was on a more stable basis. Mr. Vosburgh's paper was discussed at length and many opinions were given as to the future of the passenger business and the best methods of building it up.

Address by Ivy Lee

At the beginning of the afternoon session on October 8, Ivy L. Lee addressed the convention on the subject of advertising and merchandising passenger service. He told of an instance of a railway having successfully solicited a large volume of freight traffic moving at rates known to be unremunerative. When the business was secured, the problem was then put up to the operating department to handle it more efficiently so that it might yield a profit, and this they were beginning to be able to do. He believed that the railways never had carried passenger traffic in a volume commensurate with the possibilities if an effort were made to develop facilities for mass transportation at prices which would be attractive.

He said that one of the obstacles, of course, was the uniform rules and regulations under which the railways worked, which condition hindered experimentation. He urged that the railways should come to an agreement to permit and even encourage individual railways to carry on extensive experiments in various directions in the endeavor to solve their problem.

Advertising, he said, was only a part of the sales program. Advertising could not sell a product if it did not have an intrinsic appeal to the public and an attractive price. Advertising, he continued, should never be looked upon as an expense, but rather in the light of an investment from which a fair return should be expected. Following this line of reasoning, if it were an expense which could be justified only in times of plenty, then really it could never be justified. If, on the other hand, it were really an investment which would bring in an adequate return, then it should, as a sensible business policy be continued actively in the period of depression as much as at any other time. He related an anecdote about an owner of a hotel chain who advertised the high class of service provided at his hotels and who explained that he was not endeavoring in this campaign so much to acquaint the public with the class of service which his hotels gave as he was to impress upon his employees the quality of performance expected of them. If he could sufficiently, through this campaign directed ostensively to the traveling public, impress his employees with the quality of performance they should offer, then he thought this service would advertise itself by word of mouth to potential patrons. Mr. Lee recommended the alternative of intelligent use of smaller space for effective advertising as contrasted with blatant larger space and expressed the opinion that continual variation in advertising copy was essential to hold the interest of the reader.

Air Transport as a Competitor

Mr. Lee was followed by J. Murray Gibbon, director of publicity and advertising of the Canadian Pacific who described a recent campaign of this company in behalf of its hotel at Banff, Alta. An abstract of Mr. Gibbon's paper will be published in an early issue of the *Railway Age*.

T. B. Clement, general traffic manager, Transcontinental Air Transport, addressed the meeting, presenting an optimistic view of the early future of air transport and predicted that it would be a serious competitor of the railways. He said that the air lines would be able to overcome the weather hazard; to provide comfort equal to the best trains; to reduce rates to equal those of long distance motor coaches; and to provide much greater speed than any other agency of transportation could ever hope to reach. He pointed out that competition among air lines is tending to disappear with the likelihood that each route will be served by one strong line. He expressed the opinion that the railways ought to take cognizance of this development and endeavor to correlate their activities with it, possibly acquiring a measure of financial interest in it or otherwise obtaining a voice in its development and operation so that the two forms of transportation could develop co-operatively rather than competitively.

J. M. Eaton, traffic manager, Pan American Airways, explained that his company, which operates air lines from Miami to Havana and thence to South America, was non-competitive with the railways and was in a po-

sition to develop business for them through an interchange of traffic at Miami. He told of the friendly relations existing between his company and a number of railroads, but said that the business was not developing as rapidly as it might for the reason that ticket sellers and other employees of the co-operating railways had not yet sufficiently visualized the possibilities of this service to enable them to sell it effectively to the public. Both Mr. Clement and Mr. Eaton pointed out the fact that air travel was not always competitive with the railways in that, by the greater speed offered, it developed a good deal of business which would not move at any rate by slower forms of transport.

F. P. DeHoyos, commercial agent, National Railways of Mexico (New York), told of some of the problems of the Mexican railways in meeting competition from highways and airways, owing to round-about rail routes in mountainous country and to the inability of the National Railways to operate motor coaches on the highways due to unfavorable legislation. He said, however, that a great deal of success had been obtained in the development of excursion business.

Transport of Passengers' Automobiles

Favorable results were reported from the application in southeastern territory of a tariff for the transportation of automobiles for passengers, the basis being five tickets which permit the movement of one automobile in freight service and two passengers by passenger train. The report on this subject was prepared by W. J. Craig, who recently retired as passenger traffic manager of the Atlantic Coast Line, and follows in part:

The arrangement at present in effect in the Southeastern territory for the transportation of automobiles in connection with passenger traffic is the result of careful consideration extending over a period of many months prior to April, 1929, when it first became operative. Several plans were considered, including scaled charges based upon varying weights, but it was finally decided to adopt a uniform charge for all cars regardless of make, weight or value.

The basis is five tickets, covering the movement of one automobile in freight service and not to exceed two passengers in passenger train service. Arbitrary amounts of $10 and $5 are allowed to the initial and terminal lines for loading and unloading, respectively.

Due to the fact that the arrangement was not made effective until late in the Spring of 1929 very few cars were handled in connection with tourist travel into the Southeast that season, as of course the southbound movement had long since been over and the end of the northbound movement was near at hand.

Although the Southeastern arrangement was tendered for basing purposes to carriers in other territories, such tender was not accepted by any of our connections until January, 1930, when corresponding arrangements were made effective by the Chicago & Eastern Illinois from Chicago and stations south on its main line to Evansville, and by the Illinois Central from Chicago, Peoria and stations south thereof.

The results for the full winter tourist season of 1929-30 were most gratifying and indicate that this new service will continue to be increasingly popular. The number of cars handled southbound was 240 and the number handled northbound was 211, making a total of 451. If the arrangement is made operative generally throughout the North and East, there should be a marked increase in this traffic, as the plan will unquestionably appeal to the owners of automobiles living in the larger cities. One significant fact in connection with last season's movement is that the large majority of automobiles handled were machines of the more expensive makes.

In the beginning, and realizing that the plan was somewhat of an experiment, the Southeastern carriers authorized the arrangement in a limited way only, which was generally speaking, between the Potomac, Ohio and upper Mississippi River gateways on the one hand and recognized winter resort destinations on the other hand. Being now confident that the plan will prove increasingly popular the Southeastern carriers, have or will shortly, enlarge the territory so that a tourist who has taken his car from the North to Florida or the Gulf Coast, for example, and desires to visit other sections of the South, can ship his automobile from one section to another.

Excursions and Tours

The report on Sunday and holiday coach excursion traffic was presented by C. A. Fox, chairman, Central Passenger Association, who stated that this class of traffic had been very successfully augmented during the past year, 3500 such excursions having been operated in the territory in 1929 and the revenue per train mile averaged $3.91. He stated that the rates ranged from 0.85 cents to 1.02 cents per mile and that these excursions were run not only on Sundays but also on several holidays. Other excursions were operated to resorts such as Niagara Falls on a three-day basis. Several speakers expressed great enthusiasm about these excursions and suggested that their application was not near widespread enough. They should, one speaker urged, be mechandised on a department store basis, possibly charging fares a few cents below even dollars—$9.98 instead of $10.00. One railroad, which has been very active in this field, reported that its revenues from this source have been in the neighborhood of $30,000,000 during the past 10 years.

The present plan of providing reduced rates for conventions, i.e., of certification at the convention of attendance before reduced rates are granted, came in for some criticism. On the other hand, the plan did not lack defenders. The question was referred to the territorial associations for such action as they might care to take.

The round trip reduced rates (2.4 cents per mile) sold in New York suburban territory by the New York Central was discussed by Harry Parry, passenger traffic manager, New York Central. Before the introduction of these excursion tickets, considerable abuse of the use of the lower-rated 50-trip family tickets had been observed and these reduced round-trip tickets have minimized this evil. Tickets sold at these rates are not good for passage during the normal suburban rush hours. Several speakers dealt with the subject of all-expense conducted tours and the results mentioned were favorable in every case.

T. D. Wickham, superintendent dining cars, Chicago, Rock Island & Pacific, presented a paper on dining car service in which he called attention to the great increase in dining car expense in the past fifteen years. He expressed the opinion that the type of patrons in Eastern territory was rather uniform, but in the West more diversified, making for a difference in the problems of catering in the various territories. He urged that passenger officers in the various territories should agree to definite standards to be maintained so that more definite arrangements could be made to curtail expense in this unremunerative service.

H. P. Clements, passenger traffic manager, Pullman Company, presented a paper on the subject of the new rates for single occupancy of Pullman sections, the results of which have been very favorable, not only because there has been a material increase in the utilization of space which otherwise would not have been occupied, but because the provision of this facility is stimulating a spirit of salesmanship on the part of Pullman conductors, a spirit which the company is fostering in every way.

P. W. Whatmough of the Cunard Line presented a paper on the co-operation of rail and steamship lines. He stated that the steamship lines had begun the development of tourist third-class travel from Europe to this country and believed that it could be further developed by co-operation on the part of the railway lines in this country and that of the federal government.

Committee Chairmen

New members to the Executive Committee were named as follows: Chairman, F. C. Coley, passenger traffic

manager, New York, New Haven & Hartford; D. M. Bowman, passenger traffic manager, New York Central; N. W. Pringle, passenger traffic manager, Lehigh Valley R. R.; G. P. James, general passenger agent, Atlantic Coast Line. Chairmen of the various standing committees of the association for the ensuing year are as follows: Association Ticket Paper, C. A. Cairns, passenger traffic manager, Chicago & North Western; Standard Forms for Interline Tickets, J. E. Hannegan, chairman, Southwestern Passenger Association; Joint Committee with the Accounting Officers, G. W. Squiggins, general passenger agent, Baltimore & Ohio; Official Digest of Fares and Divisions, L. A. Blatterman, general passenger agent, Wabash; Aviation, C. E. McCullough, passenger traffic manager, Pennsylvania; Motor Coach Lines, E. D. Osterhout, passenger traffic manager, Reading; Publicity, D. M. Bowman, passenger traffic manager, New York Central.

Pennsylvania Clayton Law Case Argued Before I. C. C.

WASHINGTON, D. C.

ARGUMENTS were heard by the Interstate Commerce Commission on October 10 on its complaint against the Pennsylvania Railroad and the Pennsylvania Company alleging violation of section 7 of the Clayton anti-trust act by the acquisition and ownership of the Pennsylvania Company of stock of the Wabash and Lehigh Valley.

W. H. Bonneville, director of the commission's Bureau of Inquiry, presented the argument for the "prosecution," contending that the Pennsylvania, through its subsidiary, controls 48 per cent of the stock of the Wabash and 49 per cent of that of the Lehigh Valley, and that therefore it can control both companies at any time it wants to. He argued that this case is similar to those involving acquisition of the Wheeling & Lake Erie and the Western Maryland, except for the fact that the Pennsylvania acted through a subsidiary, and that it is not necessary to prove that competition actually has been eliminated but only that the result may be to lessen such competition. The defendants' own evidence shows, he said, that the stock was not purchased *solely* for investment and he cited figures to show that there is a continued loss of about $2,000,000 a year as the difference between the dividend income received by the Pennsylvania from the two roads and the interest on the securities sold to effect the purchase.

To support this contention he referred to a letter from Vice-President A. J. County to President W. W. Atterbury of the Pennsylvania referring to the advantages of the acquisition not only as an investment but to protect the interests of the Pennsylvania in connection with consolidation plans, and said that to hold that such a transaction was solely for investment would be to make the Clayton act meaningless. He described this case as the "counterpart" of the Wheeling and Western Maryland cases and "part and parcel of the same battle for control in trunk line territory," representing the defensive measures adopted by the Pennsylvania to meet the acts of the Baltimore & Ohio, New York Central and Nickel Plate in acquiring control of the other roads.

H. W. Bikle, general attorney of the Pennsylvania, began his argument for the defense by saying that the Pennsylvania is asking a reconsideration of the principles followed by the commission in the Wheeling and Western Maryland cases, pointing out that by reason of changes in the commission's personnel it now has only five members who voted with the majority in those cases. He contended that the purchases of stock were made solely for investment and without prospect, possibility or probability of stifling competition, on the ground that the true meaning of the word "investment" includes the defensive purpose which in this case gave the investment a special value. In the agreement of February, 1927, between General Atterbury and L. F. Loree, president of the Delaware & Hudson, which led to the acquisition of stock of the Wabash first for joint account and then later by the Pennsylvania, he said the Pennsylvania had in mind the idea of assisting in the creation of a fifth eastern system in which it would have an interest which would insure friendly relations, but he argued that there is not in the record a line of evidence to show any purpose to suppress competition.

Replying to the suggestion that the roads would not be likely to take any overt step in this direction while the proceeding before the commission is pending he said that they would be at all times faced with the possibility that the Clayton law would be invoked if they should attempt to lessen competition. He also pointed out that the Pennsylvania Company has done nothing prohibited by the statute and that there has been no claim that the purchase lessened any competition between the Wabash and the Lehigh Valley. Therefore, he said, the statute doesn't fit the case.

Mr. Bikle also said that the Supreme Court has twice held that to show violation of section 7 of the Clayton law there must be a showing that there is a probability that competition will be lessened and that no such evidence has been introduced in this case.

He also pointed out that there has been no intervention of individual shippers or on the part of the public to show any fear of the probability that competition will be lessened and that on the contrary the testimony indicates that there is no probability that the stock control will be used to lessen competition. He described the theory of the commission's counsel as a "recrudescence of the old theory that mere combination is anathema," whereas the Supreme Court has held that there must be an inquiry into the facts as to restraint of competition.

* * *

An Electric Train of the Gothard Railway, Switzerland, Crossing the Kerstelenbach Viaduct, Near Amsteg

Hearings on Reciprocal Buying Continue at Chicago

Roads asked about icing contracts and coal—More evidence of traffic influence—Sargent and Bierd testify

THE Interstate Commerce Commission continued its hearings in Chicago on reciprocal buying until Saturday, October 11, and then declared a recess until Monday, October 20, to prepare for the next hearings. The hearings have occupied eight days so far, during which testimony has been taken concerning purchasing policies and practices on the Chicago & North Western, the Chicago, Burlington & Quincy, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago Great Western and the Chicago & Alton. The next roads to be examined are the Illinois Central and the Chicago, Rock Island & Pacific. Additional evidence of the pressure from shippers to influence railway purchasing was developed, while the coal purchasing of several roads and also certain icing contracts entered into with concerns in which the influence of the meat packers was seen were particularly the targets of inquiry last week.

Sargent Testifies

F. W. Sargent, president of the Chicago & North Western, favored reciprocity with shippers, when testifying before the commission. He saw nothing unethical if the purchasing is done at the lowest possible cost, quality considered, and added that reciprocity is universally practiced and could not be changed without changing the method of doing business throughout the country. If reciprocity between nations is honorable and upright, he said, it is honorable and upright for industry to engage in reciprocity. When practicing law, he carried his deposits in the banks that gave him law business. He felt it to be the road's duty to purchase from those who patronized the North Western and felt that companies receiving that patronage should patronize the North Western. He did not think that it would be proper, however, to pay a premium to favor the road's "friends." Neither did he think that it would be proper in competitive bidding to show the low bid to a shipper for the purpose of giving that shipper a chance to revise his bid. When asked by the examiner if that was practiced on the North Western, he said he did not think so.

His attention was then called to the negotiations with the Car & Coach Equipment Corporation, the Hale & Kilburn Co. and the Heywood-Wakefield Company for coach seats contemplated for 130 suburban cars, and he was asked why he wired Mr. Clifford, general purchasing agent of the North Western, to place the orders with Heywood-Wakefield for current business (amounting to five cars) and to see him before placing further contracts, knowing the Heywood-Wakefield Company's bid was not the lowest. He said this was the only instance he recalled where he had over-ruled the purchasing department. He said that the Heywood-Wakefield Company was an old friend of the North Western and had two factories on its lines. The Car & Coach Equipment Co. did not ship over the North Western and he was led to believe that this concern had been selling below the cost of production and was doing so to force its competitors to buy the company.

North Western Boycotted

A boycott, declared by the Heywood-Wakefield Company over losing a contract, was revealed in the following letter dated February 14, 1929, written by the manager of transportation of that company to its factory:

> For the last two or three years we have been trying to line up the North Western to purchase our goods, but so far we have been unsuccessful unless we bid way below our costs. Last year on an order we took we lost $3,000. Recently the North Western were in the market again for seats to equip five suburban coaches. We placed bid $2.00 under our cost, yet the order was placed with our competitor who is not in a position to give the Chicago & North Western the business that we do.
>
> In view of the fact the Chicago, Milwaukee, St. Paul & Pacific Railroad are favoring us with their business, we have decided to route all our goods via that line except where it is absolutely necessary to ship via Chicago & North Western. You will, therefore, use the C. M. & St. P. & P. RR—Wisconsin & Michigan and the Ann Arbor instead of the North Western.

On March 1, 1929, President Sargent sent a long wire to the Heywood-Wakefield Company at Boston, in which he said in part:

> Our general purchasing agent made special effort to give you this business and held up bids giving your company opportunity to meet low bid.

On March 5, the manager of transportation of the Heywood-Wakefield Company wrote to the North Western's general agent at Boston, in which he said in part:

> We have adopted the policy of patronizing the roads that patronize us. There are several western roads who have always gone out of their way to favor us with their business, even at a higher price than our competitors, and it is only natural that we should reciprocate.

The boycott was lifted on March 6 and a conference held, and on March 11 the president wired the general purchasing agent as follows:

> Please place your orders with Heywood-Wakefield for current business and hereafter see me before letting contracts for new cars.

The final bids for the car seats on the basis of net cost to the road were shown to be as follows:

Heywood-Wakefield	Hale & Kilburn	Car & Coach Equipment
$1,409.70	$1,379.50	$1,196

Neither the Hale & Kilburn Co. nor the Car & Coach Equipment Co. got the orders, and the low bid of the Car & Coach Equipment Co. was withdrawn on April 4.

Concerning Icing Contracts

Mr. Sargent was also questioned about the North Western's negotiations with commercial icing concerns to build plants at Clinton, Iowa, and Proviso, Ill., and sell ice to the road. In September, 1925, the road sent out invitations for bids on the Clinton project, but the project was later postponed. A year later, the vice president of operation wrote a letter to North Western officers, including the general purchasing agent, notify-

ing them that several shippers were interested in the Clinton project and preferred to trade on a reciprocal basis. Invitations were again sent out and seven bids were received, following which the bid of a Cleveland concern was withdrawn and the contract awarded to the Western Ice Company. Later, the Proviso project was put out for bids, but the invitations were withdrawn and the contract was awarded to the Western Ice Company. The contracts were not executed until some time after the plants were in operation, during which interval the Western Ice Company was succeeded by the Continental Ice Company, in which R. O'Hara, traffic manager of Swift & Company, was prominent. Mr. Sargent explained that the studies for these icing facilities had been assigned to a committee headed by F. Walters, vice-president of operation. He agreed that the delay is signing the contract was unusual. He met R. O'Hara for the first time and learned of his interest in the icing company at the opening of one of the Proviso plants.

E. A. Clifford, general purchasing agent, testified that while the contracts were delayed, the terms had been agreed upon and were in writing in various letters. It was then brought out that the North Western wanted the contract to show the initial cost of the plants, under an option to purchase if it desired to do so subsequently, whereas the icing company insisted on expressing the cost on the basis of an appraised value. All the road got was an agreement to determine the cost by arbitration, with an additional clause that the cost should not exceed a certain maximum. His attention was called to a report in which the chief engineer of the North Western said the icing company's appraisal was exorbitant, referring, among other things, to the fact that the cinders for all grading and filling work had been furnished free by the road; also that the icing machinery had passed through several hands after it had been sold to the original holding company for the work. He said the final appraisal of $300,000, agreed upon for the Clinton plant, was a halfway compromise between the icing company's appraisal and the North Western's. The commission asked Mr. Sargent to furnish the entire report of the road's committee on the icing studies.

Further Inquiry on Car Buying

A. A. Adams, freight traffic manager of the Edward Hines Lumber Company (from which the North Western purchases lumber in large quantities and obtains a large tonnage of freight), and A. R. Gould, assistant freight traffic manager of the North Western, were questioned at length about 200 cars which the lumber company had purchased from the New York Central in 1929 and, with the assistance of the railroads, managed to move under revenue loading to their destination at Burns, Ore. In a letter written to Mr. Gould on March 4, the freight traffic manager of the lumber company said in part:

> We have just closed a contract for the purchase of two hundred (200) composite mill-type cars, 100,000 pounds capacity; load capacity 129,000 (standard A. R. A.) formerly the property of the New York Central.
>
> The purpose of writing you is in your solicitation of commodities for westbound movement would appreciate your encouraging certain line of shippers to use our particular cars. This, of course, will save us considerable money, and will save carriers per diem and other charges, as they necessarily will have to haul cars back empty.

The cars were delivered to the order of the lumber company at Chicago, and both the North Western and the New York Central assisted in getting freight for them. Some of the cars were held several months for loads and 39 were moved into Ohio and Alabama for their loads. The New York Central initials were left on the cars. The government questioned the arrangement as an alleged violation of per diem and routing rules and of the Commission's decision (Cloud River Railway Company vs. Southern Pacific et al) regarding rates on privately-owned cars. Mr. Adams would not admit that the cars were the property of the Edward Hines Lumber Company. In a letter written after most of the cars had reached Oregon and after the Union Pacific had billed the company for freight the assistant vice-president of traffic of the New York Central lines at Chicago, addressing the general counsel of that road, said in part:

> The Edward Hines Western Pine Company did not want these cars restenciled . . . They, however, wanted to have the cars loaded through to Burns in order to save freight charged on the empty equipment.
>
> It appears, however, that cars of private ownership under load are assessed freight charges from the Missouri River to Transcontinental destinations and the Union Pacific propose to assess a charge of $145.00 per car from Omaha to Burns on all of these cars which move under load, therefore, we are asked by the purchaser to change the terms of sale of the contract to read $480.00 net to the New York Central plus all charges, whatever character, from Chicago to Burns, Ore.

Mr. Gould testified that the North Western had made a strong effort to get loads for the cars and had solicited business for four or five months. He also testified that it was not at all unusual for carriers to waive per diem charges, but insisted that the arrangement was entered into with the lumber company with the thought that the North Western would get the freight haul on the revenue lading without having to use its own equipment, and not to accommodate a big shipper.

Milwaukee Officers Called

During the examination of Chicago, Milwaukee, St. Paul & Pacific officers considerable correspondence relating to the purchase of draft gear and coal was introduced. On October 1, 1928, the chief purchasing officer, writing to the vice-president of operation, said in part:

> I do not see how we can leave Cardwell out of the picture. We have a great many on the railroad, they are of excellent commercial value to us and will surely cause pressure to be brought to bear if we take them off the list.
>
> My suggestion is we put them on the list and give them the minimum amount of our regular business, and in this way we will not harm ourselves or them either.

In another letter, written to the president, the vice-president of traffic said in part:

> The Grigsby-Grunow business is controlled by a Mr. Cardwell, who is also interested in the Union Pacific Gear Company, and they have been a little dissatisfied, feeling that we have been purchasing more of our draft gears from their competitors than we should.

The attorney for the Waugh Equipment Company objected to the presentation of correspondence purporting to show Armour influence in connection with the Waugh draft gear sales, but his objections were again over-ruled. In a letter dated October 11, 1928, written to the president of the road, the vice-president of traffic said:

> I am a little disturbed with reference to the position the Armour people take regarding our use of the Waugh-Gould Draft Rigging on the new cars.
>
> Mr. Ellis (vice-president of Armour & Co.) is very insistent that he be given a representative portion of the business and he interprets this as a minimum of one-half. He is not at all satisfied with 500 (gear).
>
> I am advising you because Mr. Ellis feels that he had your support as to being given a representative proportion of the business, and he maintains that anything less than

one-half is unfair, and I am afraid he will throw this up at us for a long time unless we do a little more for him.

D. C. Curtis, chief purchasing officer of the Milwaukee, testified that purchases are divided according to the recommendations of the traffic department. Shippers are favored by offering them orders at the lowest price obtained in competition, but the lowest bidder is always given some orders, regardless of traffic, as his reward for bringing down the prices. Definite agreements are sometimes made for a certain amount of traffic in return for a certain volume of purchases. He insisted that traffic is ignored if the price and quality are not as good as another firm can offer.

Lumber purchases, he testified, are made from the concerns which offer the lowest price, regardless of whether they are large or small mills, or wholesalers. There is not much variation in the prices of acceptable lubricating oil, he said, and the purchases are made mostly on the basis of traffic. Most of the coal is bought in the Southern Indiana fields, chiefly from mines served by the Milwaukee. The purchases are made on the basis of three-month contracts, with a uniform price to all operators furnishing the same kind of coal, and the purchases are made on the basis of revenue tonnage.

Coal Purchasing Attacked

Mr. Curtis was asked to explain why the Milwaukee supplied the Chicago Union station with its coal at a cost of $1.05 f. o. b. mine from May to September, 1929, and for 70 cents a ton in October and November, and paid $1.50 a ton for coal from the same district for its own use at that time, particularly in view of his testimony that the Milwaukee "dickers" with the coal operators to get a "rock bottom" price and that the Union Station Company had not "dickered" with the Milwaukee when contracting for its coal. His explanation was that the road was getting a higher grade of screenings than the station got.

On February 9, 1929, the purchasing agent of the Milwaukee, writing to the coal traffic manager, said in part:

> The Binkley Coal Company are asking us to give them some help, to the extent of about three cars mine run daily from their I. & O. strip mine, in return for which they are to give us all commercial billings from this mine instead of giving half to the Monon and half to us, as in the past.
>
> I understand average daily production at the I. & O. mine runs about 21 cars, in which event we stand to get about 18 commercial billings daily.

The inspector approved the coal, with the provision that care should be taken to keep out earth when loading, and the fuel agent, quoting the coal traffic manager that "we accept three cars per day for traffic reasons," recommended it be bought for $1.75 per ton,, following which the purchasing agent ordered 10 cars a day from the mine, although the assistant superintendent of motive power protested, as appears from a letter to the purchasing agent, in which he said in part:

> Will you be kind enough to advise if taking mine run from this mine means that less mine run will be taken from other mines, or are we to increase the use of mine run which we know from experience is not a desirable locomotive fuel, unless the operating department is willing to accept delays on long runs incidental to burning this kind of fuel?

J. T. Averitt, coal traffic manager, explained that coal of the character provided from the I. & O. mine was becoming depleted and he saw the possibility of a large market for this coal in Milwaukee which would put the mine on its feet and make it a good traffic producer for the road. He did not know how the price of $1.75 per ton had been determined, but knew that the road's arrangement with the coal agency had taken all the commercial traffic of this mine away from the Monon and also testified that the market he anticipated for the coal did not materialize, and it was only a short time later that the mine failed. His attention was subsequently called to figures showing that the Monon had been buying coal from this mine at $1.60 and $1.65 a ton.

It was shown that, in large part, the fuel coal for the Milwaukee is brought through selling agencies, some of which order the coal from other selling agencies before it is finally ordered from the mine, and several agencies get coal from the same mines. Referred particularly to the contract with the Consumers' Company, Mr. Averitt was asked why this coal should be bought through two or more selling agencies, and replied that the reason was "purely reciprocity," explaining that the Consumers' Company, for example, does not have yards on the Milwaukee. He insisted that the price was standard, whether the company was a selling agency or an operator, and, when asked if he did not think that the Consumers' Company, for example, wanted a little profit itself, testified that the coal producer would probably have to take less from the selling agency than it would get by selling directly to the road. It was then shown that the Milwaukee paid $2.10 a ton for coal from the Friar Tuck mine in October, 1929; $2.20 in November and $2.20 in December; while the Monon had been getting coal from the same mine through another agency for $1.75 per ton.

A Twenty-Year Ice Contract

The subject of icing was again attacked during the hearing when W. L. Ennis, manager of refrigerator service on the Milwaukee, was asked to tell what he knew about the refrigerator plant that had been built for that road at Savanna, Ill., by the Continental Ice Company. The Continental Ice Company was authorized to build this plant without bids having been taken from other concerns, and a twenty-year contract made with the Milwaukee was not signed until after the plant was completed and in operation. The contract gives the road an option to purchase on a 12 months' notice at a cost to be determined by arbitration, but the cost has not yet been determined.

Mr. Ennis stated that, while competitive bids had not been received, he succeeded in having the charge for ice reduced to $3.70 a ton for bunker ice and $2.75 a ton for ice by the carload. He did not know why he had been sent to that company and did not know that R. O'Hara was interested in the project until just before the contract was let. He stated that the proposal of the Milwaukee to have this plant built was generally known at the time, but he did not know why other companies had kept quiet. Mr. Curtis testified that he had nothing to do with this project and had not been asked to investigate icing prices, although the purchasing department handles all other icing purchases of the road.

Premiums for Traffic Called Rebating

H. T. Pierpont, vice-president of traffic, testified that he would consider it rebating for a road to pay a premium to get a large amount of traffic. He believed that the Milwaukee gets competitive traffic as a result of purchases and agreed that it might result in taking the traffic from other roads. Mr. Pierpont was referred to correspondence revealing the activity of various manufacturers in the use of their alleged control of traffic of other companies in promoting the sale of their de-

vices, and particularly to the correspondence relating to the Forsyth draft gear, which opened with a letter to H. E. Byram, chairman of the Board, from a law firm listing the officers of the Forsyth draft gear and disclosing the shipping interests which they represent. The file also contained a letter in which one of the stockholders, a vice-president of the Standard Oil Company, was shown to have intervened in behalf of the Forsyth gear. There was also a letter from another stockholder, W. A. Taylor, calling attention to the routing of freight by the Chicago Furniture Forwarding Company and the Transcontinental Freight Company over the Milwaukee; also a letter from T. E. Snyder, vice-president of C. U. Snyder & Co., another stockholder of the Forsyth Company, who wrote to the superintendent of the car department of the Milwaukee, as follows:

We are owners and operators of tank cars for many years and control a considerable volume of competitive traffic, the average weight of our shipments being over 90,000 pounds.

We are taking the same attitude toward your railroad that you see fit to take with the Forsyth Draft Gear Corporation, wherein so far as competitive traffic is concerned, our ears are closed to any further statements or arguments from your solicitors and it will not take us a great deal of time to divert traffic that will amount to at least one hundred thousand dollars ($100,000.00) in gross revenue.

Reciprocity on the Great Western

Oscar Townsend, vice-president of traffic of the Chicago Great Western, said that since 1912 it has been customary to notify the agents of purchases made with different firms for use in soliciting traffic. No recommendations are made to the purchasing department concerning small purchases, but it is customary, in connection with large orders, for the purchasing agent to show the traffic department the bids and ask for the traffic department's recommendation.

A. C. Simmons, purchasing agent, testified that it was not uncommon to confer with shippers in an effort to get their prices down so that they could share in the business, but claimed that bidders are not allowed to see their competitors' prices before orders are placed. He was not prepared to speak concerning purchases handled under contract, which, he said, are arranged by the president.

Included among the exhibits introduced in evidence was a letter comparing the purchases with and traffic obtained from various hardware concerns, in which a traffic officer of the Great Western said in part:

The Richards & Conover Hardware Company of Kansas City calls attention to the small amount of purchases made from them during the past year. The Townley Metal & Hardware Company of Kansas City complains that we are not buying anything from them. Both of these companies give us a very nice business and we are making a strong effort to increase this.

In my opinion, our interests will best be served if our purchases of hardware can be made from the Wyeth Hardware Company, St. Joseph, Richards & Conover Hardware Co., and the Townley Metal & Hardware Co., Kansas City, and the Brown-Camp Hardware Co., Des Moines.

Three days later, the traffic vice-president wrote a memo to the general freight agent, in which he said:

The purchasing agent will confine his purchases hereafter to the requirements mentioned in your letter.

Questioned about this correspondence and his statement to the traffic vice-president that he would "be glad to handle as outlined," Mr. Simmons explained that it was understood that the prices for the commodities must be "in line."

Correspondence between the road and the Kendrick Oil Company began with a letter dated February 14, 1928, in which the general freight agent said in part:

Mr. Clark Kendrick of the Kendrick Oil Company, this city, just advised me that he has received wire asking for quotations on petroleum products.

These quotations were made by wire this afternoon and Mr. Kendrick promised to reimburse us with four cars freight for every car ordered, and insisted that I help him on this order.

On February 20, the general freight agent, writing to his general agent said.:

Mr. Simmons is today sending order to the Kendrick Oil Company for four tank cars of fuel oil. I hope this will be of assistance in enabling you to secure commercial shipments controlled by the Kendrick Oil Company.

With reference to these and similar negotiations with the Kendrick Company, Mr. Simmons said that the purchases of fuel oil were made at the best prices obtained in competitive bidding.

On September 24, 1928, the purchasing agent received a letter from The Pennzoil Company about the road's proposed contract for lubricants, which read in part:

Mr. Wilner (Mr. Simmons' assistant) and I talked on traffic which is given your company by the British American Oil Company, Ltd., of Toronto, Canada, who authorize us to use their traffic in our behalf with you.

During 1928, the traffic manager of the Great Western solicited the Youngstown Sheet & Tube Co. and the Roxana Petroleum Corporation for pipe to be used in building the latter's pipe line. The traffic manager of the Roxana Petroleum Corporation replied:

We will do what we can for the Chicago Great Western, however, you appreciate our routing now depends largely upon purchases of lubricating oil made by the various lines.

The traffic manager of the Youngstown Sheet & Tube Co. replied with a wire, in which he said in part:

We understand you are in the market for three hundred cars automobile and two hundred box cars. Of course we are interested in furnishing the steel doors through the Youngstown Steel Door Company.

A few days later, the traffic manager of the Great Western wired the Youngstown Sheet & Tube Co. that it would arrange to use Youngstown doors on 300 auto cars and finally the general agent at Cleveland notified the traffic manager that the Youngstown Sheet & Tube Co. had given the Great Western 25 cars of pipe, consigned to the Shell Pipe Line Co.

Mr. Townsend's attention was also called to a letter in which he had notified one of his freight agents that Cardwell draft gear were to be used on all or at least part of 500 box cars, that Mr. Cardwell was heavily interested in the Grigsby-Grunow Company and requesting the agent to call on J. E. Tarelton "who is connected with the Cardwell Draft Gear Company and who has assured President Howard that he could secure a substantial amount of the business from the Grigsby-Grunow Company." The road bought the gear, but did not get any traffic.

During 1928 the Great Western made a six-year contract with the Truax-Craer Coal Company, a sales agency with commercial traffic in West Virginia for fuel coal from a strip mine in Southern Illinois to cost the road $1.48 f. o. b. mine and $2.70 f. o. b. line, and in 1929, made a 10-year contract with the Coal Stripping Company for coal from other mines in Southern Illinois to cost the road $1.50 and $1.40 f. o. b. mine, and from $2.75 to $3.15 f. o. b. line. The company had a mine on its own track from which it got four cars a day without a contract, and it was also shown that some coal was bought from other mines independently of contract. John Coenen, who was fuel agent in 1928, was questioned at length by the examiners to find out

why the railroad had withdrawn its support from the local mine for the more remotely-situated mines and also the reason for making contracts over so long a period, but he was not prepared to say.

The I. C. C. brought the second week of its hearings on reciprocity to a close on Saturday, October 11, with the examination of Chicago & Alton officers. It was brought out from voluminous correspondence between R. O'Hara, traffic manager of Swift & Co., and the officers of the Alton, that the overtures of Mr. O'Hara led to the purchase of draft gear, following which S. G. Lutz, chief traffic officer of the road, received a letter from his agent that he had found Mr. O'Hara "very well satisfied" with the result of conferences and that the "Alton could look for a fair amount of business from the packers during the balance of the year."

The correspondence about the Forsyth gear opened with a note to the receiver from the chief traffic officer, transmitting a list of the stockholders of the Forsyth Draft Gear Company and stating that "nearly every one of the stockholders interested in the gear is a large shipper and in a position to do us good." Another letter contained the following statement from the president of the Forsyth draft gear corporation:

> I am sure that an order such as above referred to would result in some of our stockholders giving the Alton additional tonnage which will offset the expenditure several times, and it is this tonnage that prompts me in sending this note to you.

Instead of getting tonnage as a result of purchasing some of these gear, S. G. Lutz, vice-president of traffic, said the facts were that "we lost some business," explaining that one of the stockholders had routed business another way. He considered the reasons were entirely independent of reciprocity, but heard that the road favored with the traffic had bought the draft gear.

W. G. Bierd, receiver of the Chicago & Alton, testified that purchases are made on a reciprocal basis as far as possible, explaining that this was the way business in the country is done. He said he would consider it good business for a railroad to pay a small premium at times for tonnage, and explained that when he came to the Alton the road was buying its coal at the lowest price and half the mines were in receivership. The Alton raised its price 11 cents a ton and actually solicited business for the mines, he said, as a result of which the mines were strengthened and the Alton made "millions in revenue for a few hundred dollars spent for purchases." The Alton has come to the rescue of the coal mines four times, he said, in his administration, and the coal operators have not forgotten it. He testified that last year the Alton could have bought spot coal cheap, but it would have lost business if it had done so.

Unregulated Competition Menaces the Railroads

A PLEA for a better understanding of the nation's railroad problems, to the end that a fair and just regulation of all transportation mediums may be reached through legislative action in the various states and in the national congress was voiced by J. M. Kurn, president of the St. Louis-San Francisco, in an address at the annual "Frisco Lines" banquet of the Enid, Okla., chamber of commerce on October 3. "The nation's splendid system of railroads," Mr. Kurn said, "has become so firmly intrenched in the public consciousness that the users of this familiar transportation plant sometimes lose track of its importance to the nation's welfare. Analyzed in total we find the modern railroad plant in America to be a veritable giant of industry. We learn from the official statement of the Interstate Commerce Commission for 1928 that the Class I roads of America number 169, that they operate a total of 240,756 miles of road, that they have 23 billion dollars invested in road and equipment, that they employ 1,656,000 wage earners and pay them annually $2,497,000,000 in wages.

"But these figures, startling as they are, do not begin to tell the full story of the railroad's importance to America. They deal only with the inner workings of the railroad plant, with its employees and its mileage. In addition, the railroads of America, during the year of 1929, consumed 20 per cent of the total output of lumber in this country, used 25 per cent of the bituminous coal produced, bought 20 per cent of the steel, 20 per cent of the fuel oil, and purchased $400,000,000 of other manufactured products.

"The largest single items of expense for those four major commodities I just mentioned amount to more than $300,000,000 a year for coal; $160,000,000 a year for timber, including crossties; and $100,000,000 for steel. Exclusive of miscellaneous material and supplies, such as Cement, lubricating oils and greases, ballast, electrical materials and commissary supplies, paints, chemicals, etc. the American railroads spend one billion dollars in a single year for coal, oil, forest products and iron and steel products. Nor is that all of the railroad's contribution to the welfare of the country it serves. In 1929, the Frisco railroad alone paid out $5,222,248 in taxes, an amount equal to 25 per cent of its net railway operating income.

"It is inconceivable that the American people should willingly harm or hinder so important an industry, and it is still more strange that they should neglect to protect it from competition on the highways when that competition is unregulated, and actually operating over roadbeds for which the railroads themselves help pay. From the figures I have just given you, you will readily appreciate that to hurt the railways is to hurt the country. To hinder in any way the progress of these rail lines is to hinder the purchasing power of the railways, and to adversely effect the purchasing power of the employees themselves.

"Yet it is a positive fact that throughout this nation, with the growth of good roads, the railways are being seriously affected by competition of buses and trucks. These motorized vehicles are operating with the payment of negligible license fees over roadbeds provided them by the states and counties through which they run, and they are, quite naturally, able to transport freight and passengers at a much lower rate than the railways. The result of this unregulated competition has already been felt severely by the rail lines, and unless the regulation by the local and state governments is forthcoming, these results will become more hurtful as time goes on.

"As an example of what has happened to Frisco Lines alone, let me tell you that our passenger earnings have decreased about $16,000,000 during the 10-year period since 1920. This, translated into numbers of passengers, means that in 1920 we carried 5,500,000 passengers and in 1930 we will carry about 2,500,000. Some of this, perhaps a great deal of it, is attributable to the use of the private automobiles, and with this form of transportation we have no quarrel whatever. But a large part of this decrease in our passenger busi-

ness is directly chargeable to the competition given us on the highways by buses.

"Similar decreases are being felt in our freight traffic as the use of trucks and trailers grows, and it is growing by leaps and bounds. All in all, we can translate this back to the purchasing power of the railways and the purchasing power of their employees. I have been in the railroad business since I was 13 years old, and I have never seen the time when the railroads were prosperous that the country was not also in a prosperous condition, and the reverse is also true. The railroads of the country are not asking for subsidy. They are not asking for pity. They are not asking for charity. They are asking the American people for the square deal to which they are entitled."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 4 amounted to 972,492 cars, an increase of 22,111 cars as compared with the week before, although it was 207,455 cars less than the loading in the corresponding week of last year and 214,540 cars less than that in 1928. All classes of commodities and all districts showed decreases as compared with both years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 4, 1930.

Districts	1930	1929	1928
Eastern	210,641	261,814	262,382
Allegheny	191,415	231,179	236,886
Pocahontas	54,702	64,629	61,918
Southern	136,539	152,175	161,883
Northwestern	142,223	182,047	185,159
Central Western	154,367	186,594	181,622
Southwestern	82,605	101,509	97,182
Total Western Districts	379,195	470,150	463,963
Total All Roads	972,492	1,179,947	1,187,032
Commodities			
Grain and Grain Products	42,620	49,549	57,601
Livestock	30,079	36,159	38,575
Coal	169,413	202,557	207,645
Coke	8,654	12,156	10,947
Forest Products	41,552	60,690	65,281
Ore	41,430	65,908	61,406
Merchandise, L.C.L.	244,855	272,999	271,584
Miscellaneous	393,889	479,929	473,993
October 4	972,492	1,179,947	1,187,032
September 27	950,381	1,203,139	1,196,965
September 20	952,512	1,167,395	1,144,131
September 13	965,713	1,153,274	1,138,060
September 6	856,637	1,018,481	991,385
Cumulative total, 40 weeks	36,131,140	41,099,973	39,411,794

The freight car surplus for the last week in September averaged 394,032 cars, an increase of 4,345 cars as compared with the week before. The total included 202,398 box cars, 139,416 coal cars, 22,153 stock cars and 11,855 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended October 4 totaled 70,897 cars, an increase of 100 cars over the previous week but a decrease of 8,535 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
October 4, 1930	70,897	31,952
September 27, 1930	70,797	30,942
September 20, 1930	72,706	32,587
October 5, 1929	79,432	43,300
Cumulative Totals for Canada		
October 4, 1930	2,446,882	1,341,539
October 5, 1929	2,739,170	1,653,188
October 6, 1928	2,718,286	1,568,215

Looking Backward

Fifty Years Ago

The question of the location of the eastern terminus of the Chesapeake & Ohio has been settled by the purchase by the railroad of several hundred acres of land at Newport News Station, Va., at the junction of the James river and Hampton Roads. It is expected that the line between Richmond, Va., and Newport News will be completed within six months.—*Railway Age,* October 21, 1880.

The Union Pacific has started the construction of its Julesburg cut-off which will extend from the main line at Julesburg, Colo., to the Denver Pacific branch near Evans, about 150 miles. This line will shorten the route between Omaha and Denver some 50 miles as compared with the present line via Cheyenne, Wyo., and will substitute for the heavy grades of the Cheyenne route an almost level line in the Platte river valley—*Railway Age,* October 21, 1880.

A consolidation of the Indiana, Bloomington & Western, the Cincinnati, Sandusky & Cleveland and the Columbus, Springfield & Cincinnati, a total of more than 900 miles of line, has been agreed to by the executive committees of the several railroads [all now parts of the Cleveland, Cincinnati, Chicago & St. Louis]. With 115 miles of new line to be constructed the new company will control a railroad extending from Sandusky, Ohio, to Peoria, Ill., 543 miles.—*Railroad Gazette,* October 15, 1880.

Twenty-Five Years Ago

The record performance in hauling heavy freight trains appears to have been made on August 19 when a Lake Shore & Michigan Southern [now a part of the New York Central] locomotive hauled 95 cars of coal from Youngstown, Ohio, to Ashtabula, with a total tonnage of 6,063, including tender and caboose.—*Railway Age,* October 20, 1905.

Frank Walters, superintendent of the Sioux City division of the Chicago & North Western, has been appointed assistant general superintendent of the Nebraska & Wyoming division, with headquarters at Norfolk, Neb. William J. Black, general passenger agent of the Atchison, Topeka & Santa Fe, has been appointed passenger traffic manager of that system. —*Railway Age,* October 20, 1905.

Ten Years Ago

J. S. Hungerford, assistant vice-president of the Canadian National, has been elected vice-president in charge of operation, with headquarters at Toronto, Ont. C. S. Gzowski, special engineer at Toronto, has been appointed assistant to Mr. Hungerford.—*Railway Age,* October 15, 1920.

The Interstate Commerce Commission has begun consideration of a tentative plan for the consolidation of the railroads into a limited number of systems in accordance with the terms of the transportation act. Prof. William Z. Ripley of Harvard University has been retained to assist the commission in working out such a plan and has been engaged on the work for about a month.—*Railway Age,* October 15, 1920.

The difficulties that have been experienced by the railroads in getting money out of the United States treasury, either on account of their guaranty or as a loan from the $300,000,000 fund provided for that purpose, have been brought to public attention by the issuance by the comptroller of the treasury of an opinion that such payments must await the determination of the commission as to the exact amounts due the railroads. Payments to the roads on account of somewhere between $300,000,000 and $400,000,000, much of which is urgently needed at this time, are delayed as a result of this decision.—*Railway Age,* October 15. 1920.

Communications and Books

Pooling Cabooses

INDIANAPOLIS, IND.

TO THE EDITOR:

I read with much interest the article in your September 27 issue, under the heading of "Pooling Cabooses." Having been for many years a brakeman and a conductor on different railroads, and, in addition, having spent the greater portion of my 30 odd years of railroading around terminals, I believe that I am qualified to say something on the subject.

Ordinarily, no yard room would be saved by pooling cabooses for the reason that only a small percentage of trains can run through any terminal without breaking them up. Therefore, a caboose track must be maintained, and these caboose tracks are usually located adjacent to a running lead which would have to be kept open in any event.

The most important consideration of all is the fact that in most instances the crews live in the cabooses at the away-from-home end of the road. They furnish their own bedding, which they naturally carry in the caboose. They change from their street clothes to their working clothes, carrying in the caboose such things as rain coats, rubber boots and other articles that they must have at all times to change into in case of sudden changes of temperature, inclement weather, etc. The writer does not state what he would have the men do with these personal effects when they get off their cabooses.

If I wanted to break the morale of the trainmen on any railroad, I believe I could do it quicker by issuing an order that the cabooses would be pooled than in any other manner. Undoubtedly there are isolated cases where the pooling might be justified, but this would simply be a local proposition which could be handled on its merits. As a general proposition you will find the majority of railroad officers opposed to it, to say nothing of the men who actually occupy the cabooses.

F. N. REYNOLDS,
Assistant General Superintendent, Cleveland, Cincinnati, Chicago & St. Louis.

New Book

New Building Estimators' Handbook, by William Arthur. 1024 pages, illustrated, 7 in. by 4½ in. Published by Scientific Book Corporation, 15 East Twenty-Sixth street, New York. Price $6.

This is the fifteenth edition of a handbook that appeared first in 1909 as a 150-page manual. According to the author, it is designed for the use of those concerned with all kinds of ordinary buildings, including dwellings, office buildings and railroad shops. It deals with the details of construction that go to make up the building rather than the building as a whole and covers all features from the excavation to the lighting and plumbing fixtures. The treatment of the various chapters, which is uniform throughout, embraces descriptive and instructive text matter, followed by data on the nature and cost of the materials available and data on costs of applications or construction. In general, the matter appears to be thoroughly up to date, but, like subsequent editions of any book, it contains some references of an obsolete character.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Culley, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Electrification of Steam Railroads, prepared by the Electrification of Steam Railroads Committee, National Electric Light Association. "Continuing the statistical and economic studies of changes from steam to electric motive power." N.E.L.A. Publication No. 079. September 1930. Includes general report on recent progress of electrification 1929-1930 in the United States and other countries, Report of subcommittee on form of contract, Report of subcommittee for study of the electrification of Western railroads [Butte, Anaconda and Pacific, Chicago, Milwaukee, St. Paul and Pacific, Great Northern] and partial bibliography. Illustrations and maps. 73 p. Pub. by National Electric Light Association, New York City. $1 to members; $1.50 to non-members.

Railroad Consolidation in the State of Pennsylvania, by Howard C. Kidd. "A study of the probable effects of grouping of railroads proposed by the Interstate Commerce Commission upon the varied interests of the Commonwealth of Pennsylvania" submitted to the Public Service Commission of Pennsylvania. 158 p. Pub. by The Public Service Commission of Pennsylvania, Harrisburg, Pa. *Apply.*

Statistics of Railways for the Year Ending December 31, 1926, compiled by Bureau of Railway Statistics, Ministry of Railways, China. "Twelfth Annual Report of Chinese National Railways." "At various times during the past ten years, railway operation had been seriously interfered with by military authorities of previous Governments so that the accounts of some railways have been unduly delayed for three or four years. In order to enable those railways whose accounts had been thus delayed to bring their accounts up-to-date, the Ministry by Ministerial Order No. 159, dated December 15, 1928, had instructed them to submit for the years 1926, 1927 and 1928 only a summary of their financial accounts and to omit various statistics of passenger and goods traffic . . . The present report therefore, only refers to the financial accounts of the railways . . . "Letter of transmission. Report in English and Chinese and includes folding map of the Chinese Government Railways. 72 p. Pub. by Ministry of Railways, China, Nanking, China. *Apply.*

The United Department of Agriculture—Its Growth, Structure and Functions, by M. S. Eisenhower and A. P. Chew. "Research" p. 7-13; especially "Long-distance shipment of perishables" and "The Economic Services" p. 14-19 may be of interest. Miscellaneous Publication No. 88, Department of Agriculture. 147 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. 25 cents.

Periodical Articles

Aluminum Output Declines This Year—Drop in Demand of Transportation Industry Offsets Gains in New Uses. This article states that 38 per cent of the new aluminum produced by the Aluminum Co. of America is used in transportation industry (auto, railroad, railway, air and marine). Figures are given also for the saving in weight through use of aluminum alloys by various railroads in car and locomotive construction. Barron's, October 13, 1930, p. 9.

The Confederate Engineers, by William M. Robinson, Jr. "Engineer work on the railroads" p. 417-419. Military Engineer, Sept.-Oct., 1930, p. 410-419.

Impressions of an Ex-Commerce Commissioner, by Thomas F. Woodlock. Urges shortening statutory period on complaints of excessive rates. Five conclusions regarding the railroad situation are also given, the last being: "5.—In any sense the 'railroad problem' in this country is always at a 'critical stage' but not in a generation has the 'crisis' been more 'critical' than at present. After a hundred years of desuetude the stage-coach and the canal have come back for their revenge and are enjoying the full sunshine of popular favor." Barron's, October 13, 1930, p. 21, 23.

Reorganization of Spanish Railway Council, by Julian C. Greenup. "In an attempt to solve some of the problems that confront the Spanish railway system at the present time, the Government has decided upon a plan of simplification and unification of the existing railway regimen...." Commerce Reports, October 6, 1930, p. 56-57.

A Survey of Railway Rolling Stock, by Walter C. Sanders. Types and uses discussed. Military Engineer, Sept.-Oct. 1930, p. 425-434.

Odds and Ends of Railroading

Youngest Fifty-Year Man

Our busy research department has dug up a man who is undoubtedly the youngest 50-year man in the country. He is Tony Pacelli, aged 61, track foreman for the Pennsylvania at Chicago, who entered the service of that company on March 1, 1880, as water boy.

Three-County Town

The Chicago, St. Paul, Minneapolis & Omaha has, in Emerson, Neb., a claim to distinction that, probably, cannot be equalled by any other railway. Its tracks traverse three counties, Dixon, Dakota and Thurston, all within the yard limits of Emerson.

Still Another Railroad Mayor

S. P. Siefert, superintendent of the car department of the Norfolk & Western, has become the latest addition to the ranks of railroad mayors, by virtue of his recent election as chief executive of Roanoke, Va., where his railroad headquarters are located. If many more railroaders are chosen as heads of their communities, it will be high time for them to form a national association.

The Movies Are Very Strange, Too

The motion picture directors do not seem to be able to keep their geography straight. L. L. in the "About Town" column in the Kansas City Star calls attention to the photoplay "The Texan," containing a scene showing the hero purloining the villain's ticket over the Texas & Pacific from Uvalde to Galveston, two stations located on the Southern Pacific.

The Sleeping-Car Controversy

YORK, ENGLAND.

TO THE EDITOR:

In your issue of August 9 is asked the question: "who did build the first sleeping car." In 1842 the London & Birmingham Railway built a coach especially for Queen Adelaide, wife of William IV (of England). The coach was quite small but at the end was a box-like extension. This was to give extra length so that Her Majesty might lie down. The coach attracted much attention at the Railway Centenary Exhibition, at Darlington, in 1925.

E. M. BYWELL,
Secretary and Curator, Railway Museum.

Unique Track Indicator

At Blainville, France, the Chemin de Fer de L'Est has installed a unique indicating device in its hump yard. As is usually the case in Europe, the control tower extends over both humping leads, instead of being situated on the side. On the wall of this tower facing toward the classification yard, a battery of electric lights has been installed, and as each cut goes over the hump, the number of the track is flashed on this wall, the numbers being eight or ten feet high, and clearly visible to the field men and switch-throwers in all parts of the yard, by day or by night. This eliminates the necessity of providing these men with switching lists.

English Railway Uses Unique Advertising

Since 1924, the Great Western of England has sold 285,000 jig-saw puzzles, illustrating scenes, trains and locomotives on its lines. In addition to this direct sale at G. W. ticket offices and stations, the company manufacturing the puzzles has sold 70,000 of them direct.

These puzzles cover 16 subjects and are in two sizes, the smaller size selling for 60 cents, the larger size for $1.20. Each box contains, besides the puzzle, a map of the G. W., a catalogue of its publications and current railway information which it is desired to give to the public.

Originally, the puzzles were issued as a part of the educational scheme of the G. W., with a special appeal to children. It did not take long, however, to discover that adults were as much interested as the children. The puzzles proved so popular that arrangements were made with the largest toy manufacturer in England to produce the puzzles for sale by the Great Western, and also for independent sale. The publicity value obtained from the scheme is great and it is secured without cost to the Great Western. As a matter of fact, with the present great demand, a small profit is realized.

Another Young Veteran

OUTLOOK, SASK.

TO THE EDITOR:

Mr. Sesterhenn's record quoted in your August 9 issue is a good one, but I can, I think, go him one better. I was born in September, 1890, entered the service of the mechanical department of the Canadian Pacific in April, 1905, and have remained in that service ever since. Thus, at the age of 40, I have a continuous service record of 25 yr. 6 mo.

W. P. CRAWFORD,
Locomotive Foreman, Canadian Pacific.

More About Tunnels

MEXICO CITY.

TO THE EDITOR:

On the Southern Pacific of Mexico we have what I believe is a record for North America. On the Barrancas district, in the state of Jalisco, there are 26 tunnels within 26 kilometers, or 16.1 miles; this being equivalent to one tunnel each six-tenths of a mile. The two longest tunnels are each approximately 2,950 ft. long.

E. B. SLOAN,
Fiscal Representative, Southern Pacific of Mexico.

SAN DIEGO, CAL.

TO THE EDITOR:

In the Carriso Gorge on the San Diego & Arizona there are 17 tunnels in 9.5 miles of track which makes a tunnel to every 0.56 miles of track, which, as I understand it, is the best record that has so far been developed.

J. R. LOWE,
Superintendent and Chief Engineer, San Diego & Arizona.

* * *

The Hythe Pier Railway Train Which Meets the Ferry Boat at Hythe, England

NEWS

P.R.R. Asks I.C.C. Probe of B. & O. Motor Transfer

Seeks immediate investigation of train-connection motor coach services

The Pennsylvania has filed a petition with the Interstate Commerce Commission asking it to initiate forthwith an investigation of the practices of the Baltimore & Ohio in connection with the transfer of passengers by motor coach in and about New York City and Newark, N. J. The Pennsylvania insists that the B. & O. practice is in violation of the law as interpreted by the commission and that it should not be allowed unless the Pennsylvania is also allowed to offer a competitive service. The petition refers to the commission's order directing cancellation of the Pennsylvania's tariff proposing to provide transfer service at New York, which was based in part on the contention that the provisions of the tariff were vague and indefinite, and points out that the B. & O. is furnishing motor coach service without a tariff. It also avers that the B. & O. is affording service outside the established routes of its coaches and that it has used this service as a method for the solicitation of group traffic. Reference is made to the general investigation being made by the commission into the subject of co-ordination of motor traffic but the petition says that as this is a country-wide investigation it will require many months and that meanwhile the present situation should not be perpetuated.

Lake Cargo Coal Case

A lack of demand for specific rates on lake cargo coal prevailed at the hearing before Examiner T. M. Bardwell of the Interstate Commerce Commission, opened at Chicago on October 6. While complainants allege that the present rates from Pennsylvania and Ohio fields subject those districts to undue and unreasonable prejudice and disadvantage as compared with the rates from the southern districts in Virginia, West Virginia, Kentucky and Tennessee, and ask the commission to invoke its maximum or minimum rate powers in prescribing the rates, no request for specific rates has been made. During the hearing, northern operators have endeavored to show that the differential of 35 cents per ton which now exists should be increased, but have not stated whether the northern rates should be lowered or the southern rates be increased. The testimony of the carriers and the southern operators indicates that those parties are satisfied with the existing rates.

G. D. Brooke, vice-president and general manager of the Chesapeake & Ohio, testified that his road spent $37,000,000 for improvements over a period of several years, much of which, he said, was to improve the road's facilities for handling coal from southern fields. G. F. Butler, traffic manager of the Norfolk & Western, presented exhibits designed to show that the differentials complained of are comparable, from a distance viewpoint, with other differentials and other coal rate adjustments approved by the commission in previous cases. Edwin M. Keatley, a member of the Western Virginia Legislature, testified for southern coal operators, saying that any increase in rates would produce a most serious economic and social condition throughout the coal-producing states of the south. E. C. Mayholm, president of the Southern Coal & Coke Company, Nashville, Tenn., declared the present differential spread of 35 cents in favor of the northern producers has already placed an overwhelming handicap on the southern competitors, and indicated that further widening of the differential will spell ruin in the southern fields.

C. N. R. Reorganization Planned

Indications that Parliament at its next session would have before it the task of reconstructing the financial set-up of the Canadian National were suggested before the Board of Railway Commissioners of Canada last week.

Giving evidence in the newsprint rate case, E. P. Mallory, director of the Bureau of Statistics of the C.N.R. gave as his estimate of the physical valuation of the railway properties the sum of one and a half billion dollars. He would not like to say how this compared with the cash investment, he told Commissioner Thomas Vien, K.C., "in view of the situation contemplated with respect to the reorganization of the financial structure that was shortly to come before Parliament."

August Freight Traffic 16.8 Per Cent Under 1929

Eight months' volume was 12.4 per cent less than that of last year

The volume of freight traffic handled by Class I railroads in August amounted to 37,420,502,000 net ton miles, according to reports compiled by the Bureau of Railway Economics. Compared with August, 1929, this was a reduction of 7,529,746,000 net ton-miles, or 16.8 per cent. It was also a reduction of 5,004,003,000 net ton-miles, or 11.8 per cent, under the business of August, 1928. In the Eastern district, the reduction was 17.6 per cent compared with the same month in 1929, in the Southern district 18.4 per cent and in the Western 15.1 per cent.

The total in the first eight months of 1930 was 285,260,206,000 net ton-miles, a reduction of 40,208,435,000 net ton-miles or 12.4 per cent under that of the corresponding period in 1929 and a reduction of 20,267,453,000 net ton-miles, or 6.6 per cent, under that of the same period in 1928. The Eastern district for the eight months showed a reduction of 12.4 per cent; the Southern district 12.8 per cent and the Western 12.2 per cent.

The average speed of freight trains in August was the highest for any August on record, amounting to an average of 13.8 miles an hour, an increase of 0.7 mile above that for the same month last year.

The average daily movement per freight car in August was 28.9 miles, compared with 33.5 miles for the same month last year and 32.1 miles in August, 1928.

The average load per car in August was 27.4 tons. This was a decrease of 0.1 ton below the average for August, 1929, but an increase of 0.2 ton above that for August, 1928.

Barge Line Seeks Additional Joint Rates

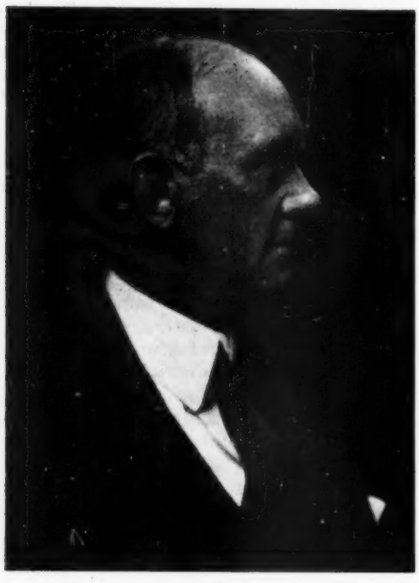
The Mississippi Valley Barge Line, which the Interstate Commerce Commission on July 11 ordered the railroads to join in the establishment of through routes and joint rates between Central Freight Association and Southwestern and Southern territories, has petitioned the commission to re-open the case for the purpose of establishing routes and rates via Vicksburg, Miss., and has also asked that the circuity limitation be increased from 120 to 133 1-3 per cent.

Bagby Elected President of Western Maryland

Vice-president and general solicitor chosen successor to late M. C. Byers

George P. Bagby, vice-president and general solicitor of the Western Maryland, was on October 10 elected president to succeed the late Maxwell C. Byers. Mr. Bagby was also named general counsel, while the office of chairman of the board of directors, also held by Mr. Byers, was not filled by the board.

Mr. Bagby has been associated with the Western Maryland for the past 13 years and thus brings to the presidency a familiarity with the problems and policies of that railroad. That his election was a popular one in western Maryland territory is indicated by an editorial comment in one of the leading Baltimore papers. This editorial held that, "The uncertainties which becloud railroad mergers at the present time accentuate Baltimore's concern in the management of the Western Maryland..... The city will find reassurance in the election of George P. Bagby to the presidency of the road, to



George P. Bagby

succeed the late Maxwell C. Byers. Mr. Bagby has long been connected with the line and is familiar with its possibilities."

Mr. Bagby assumes charge of a property which has been much in the public notice, both because of its improved efficiency and because of its position in various consolidation proposals. When its late chief executive, Mr. Byers, took office the road was suffering from a deficit. In 1929 it earned $5,824,583 in net railway operating income which after interest charges and preferred dividends left a balance equivalent to $2.66 per share on the outstanding common stock. Mr. Byers became president in March, 1920. At the close of that year the net railway operating income amounted to $380,438, a sum insufficient by $2,363,463 to pay the interest on the fund of debt. In the very next year, however, 1921, the net railway operating income amounted to $3,075,455 despite a fall in gross revenues. By the close of 1926, under Mr. Byers direction the road was well on the way to recovery since in that year earnings were sufficient to pay preferred dividends and still leave a balance of $3.27 per share on the common stock.

But the change in the Western Maryland's financial status is best revealed in the contrast of 1920 figures with those of 1929. In 1929 the total operating revenues were $18,985,707 as against the $20,205,687 gross of 1920. Despite this decline in revenue, however, operating efficiency had so increased over the 10-year period as to produce a 1929 surplus after interest charges of $2,917,822 as against the deficit of $2,363,463 after interest charges in 1929. Immediately following his election Mr. Bagby issued a statement saying that the board of directors had voted a substantial pension to the Byers family for the education of Mr. Byers' five sons.

George P. Bagby was born in King and Queen County, Va., on August 19, 1879, and received his education at Richmond College, University of Virginia and University of Maryland. He entered railway service in January, 1917, as general attorney for the Western Maryland and in March, 1920, he was appointed general solicitor. In January, 1926, he was promoted to vice-president and general solicitor, the position he held until his recent promotion. Mr. Bagby is also a director of the Western Maryland, the West Virginia, Central & Pittsburgh (part of the West. Md.), Baltimore Fidelity Warehouse Company, and the Somerset Coal Railway Co.

M-K-T Headquarters Controversy

The Missouri-Kansas-Texas was authorized by the Railroad Commission of Texas, on October 3, after more than a year's deliberation, to utilize its Waco shops in rebuilding locomotives, but was denied the right to move division headquarters from Smithville to Waco. The application for authority to discontinue the offices at Smithville and do all general repairing and overhauling of locomotives at Waco was made in September, 1929, the petition receiving the support of the Waco Chamber of Commerce and being vigorously opposed by Smithville citizens.

In 1924 the railroad announced its intention of moving its offices but was prevented by the state commission whose authority was upheld by the court which decided that the commission, under the contract, had entire jurisdiction over any contemplated move. The commission has found that the shops at Smithville are adequate for running repairs, that the Waco shops are more adequately equipped for overhauling, that the type of locomotives now used by the railroad as compared to the type in use in 1924 cannot be efficiently rebuilt and overhauled at Smithville and that the interest of the railroad and the general public will best be served by requiring the division superintendent, his staff and clerical forces to be continued at Smithville.

Wrought Iron Now Being Made by New Process

Increased production expected to effect extension in use of material

With the formal opening of the new Ambridge, Pa., plant of the A. M. Byers Company, there was introduced a new process of manufacturing wrought iron in units comparable in weight to those possible from an open hearth furnace. The production of steel in the Bessemer converter or the open hearth furnace has been common practice in this country for some 60 years and the production of wrought iron in the puddle furnace has been common for about 150 years. Owing to the fact that the only method heretofore known to produce pure iron has been that involving almost entirely manual labor, the use of this material has necessarily been limited. Under the new process, known commercially as the Byers process, it is expected that a maximum production of 50,000 tons a month can be secured. The increase in productive capacity will permit the extension of this material

Two 10-Ton Bessemer Converters Remove All Other Elements from the Molten Iron

into the field of rolled plates and will undoubtedly find a wide application in railroad work not only for piping installations in the engineering and mechanical departments but in its application to car construction and bridge and building construction as well.

The opening of the Ambridge plant signifies the practical operation of a process which has been carried on experimentally by the A. M. Byers Company at a small plant in Warren, Ohio. An article which appeared in the May 4, 1929, issue of *Railway Age* outlined briefly the basic process under which the wrought iron was manufactured experimentally on a smaller scale.

The puddling process by which wrought iron has been manufactured by hand for so many years is carried out in a furnace by which pig iron is con-

The 40-In. Blooming Mill Produces Billets and Slabs

verted into practically pure iron by elimination of almost all of the elements, other than iron itself. This pure iron is at one stage granular, and when in this condition, the grains are covered by a bath of slag so that each grain attains a slag coating. The grains are then worked by the puddler into balls and in this form the iron is removed from the furnace. The puddler's balls are put through a squeezer and the resultant "bloom" is rolled out in a mill. As the metal is rolled, the slag that has coated the grains is elongated into thin films which become interspersed in the iron in fiber form.

In the Byers process the procedure is analogous in principle, but the manner of achieving objectives is different. Pure iron is obtained by melting pig iron in a cupola and then refining the molten metal in a Bessemer converter. This highly refined iron is carried in ladles to what is known as the "processing platform" where it is carefully poured into processing cups in which is a bath of slag. This slag, the analysis of which is exactly controlled, has been prepared in an open hearth furnace and tapped into the cups. As the molten iron falls through the liquid slag it solidifies into a granular form and, as in the puddling furnace, each grain takes on a coating of slag.

A peculiar phenomenon takes place while the grains of iron are falling through the slag. As the stream of iron strikes the surface of the slag, it breaks into minute globules in the interior of which a gas instantaneously collects. While these globules are descending the gas pressure within them increases to a point where the hollow globules are completely shattered. This phenomenon, the bursting of the shells of the globules, permits the particles of metal to receive a complete coating of slag; and, thus, the action which in the puddling process gives wrought iron its peculiar structure, is carried out even to a greater degree in the Byers process.

After sufficient iron has been poured into the slag, the surplus slag is decanted and a ball similar in every respect, except weight, is found in the bottom of the cup. This ball, instead of weighing 200 lb. as in the puddle furnace, weighs from 6,000 to 8,000 lb.

It is apparent that the same reactions that are basic in the hand-puddling process are also basic in the Byers process, and that therefore, while the wrought iron produced by both methods is practically identical, the latter process

Processing—The Refined Iron Is Being Poured into the Slag Bath

makes possible a closer metallurgical and chemical control without quantity limitations or exhaustive and arduous labor.

The equipment of the new Byers plant includes a 900-ton press for producing blooms about 17 in. by 24 in., a 40-in. blooming mill, a universal plate mill with a capacity for rolling plates 24 in. to 84 in. in width, a skelp mill and a mill for rolling billets into flats, rounds, squares and other merchant mill products.

Late Sleep Now Allowed N. H. Passengers

Passengers traveling from New York to Boston on the sleeping trains of the New York, New Haven & Hartford, may now occupy their berths at destination up to 8:30 a.m.

One Plus Ten

The Central Vermont has this month put into effect within the state of Vermont, a round trip passenger rate of one fare plus ten cents, and this arrangement is called the "one plus ten plan." It has already proved more successful than had been hoped for.

New Coaches on Baltimore & Ohio Cincinnati-Detroit Trains

The Baltimore & Ohio has added reclining seat coaches for overnight travel on its trains 57 and 58 between Cincinnati, Ohio, and Detroit, Mich. The coaches are provided with reclining seats, foot rests, individual wall bracket lights, individually adjustable ventilators, smoking rooms for men and for women and a buffet for light lunches. Porter service is also available.

Testimonial Dinner Tendered Charles D. Emmons

Charles D. Emmons, recently elected president of the Hudson & Manhattan, was the guest of honor at a testimonial dinner held at the Lotos Club, 110 West Fifty-Seventh Street, New York City on October 16. Among the speakers were: Arthur Brisbane, Barron G. Collier, Gerald M. Dahl, J. H. Hanna and Charles J. Hardy. Charles C. Castle acted as toastmaster.

M. P. Speeds Kansas City-Wichita Freight Service

The Missouri Pacific has established over-night freight service from Kansas City, Mo., to Wichita, Kan., a distance of 250 miles, the shipments being handled in express refrigerator cars on regular passenger trains, in order to meet the competition of several trucking companies which provide such service. Upon the recent completion of the paving of three highways between Kansas City and Wichita, motor truck companies began the operation of large vehicles and trailers that hold about as much freight as an ordinary freight car, and make better time than freight trains.

Pennsylvania Mutual Association

Reports made at the recent general assembly of the Mutual Beneficial Association of Pennsylvania Railroad Employees indicated an unusually satisfactory financial condition of the organization. The report from the actuary revealed the association to be 108 per cent solvent; its diversified list of bond holdings shows that 97.68 per cent of these securities are rated as prime issues.

The association, owned and managed by Pennsylvania employees, was organized in 1914 and has since engaged in various social and fraternal activities in addition to providing means whereby members may

secure insurance at low rates. It has also aided in the sale of Pennsylvania stock to employees having thus far effected the distribution of 28,424 shares representing an investment of $1,600,000.

Court Sustains Philadelphia Warehouse Order

A special Federal Court of Equity, sitting at Philadelphia, on October 8, has confirmed the ruling of the Interstate Commerce Commission forbidding the payment by railroads of special allowances to 24 warehouses in Philadelphia. The roads involved are the Pennsylvania, the Reading and the Baltimore & Ohio. Complaint was made by the Board of Trade and other commercial organizations on the ground that the discontinuance of these special allowances would upset long standing trade practices. Judge Buffington dissented.

Revised Rates on Canned Goods Recommended

The Interstate Commerce Commission has made public a proposed report by Examiner R. N. Trezise recommending that the railroads be allowed to put into effect a proposed change in carload rates on canned goods to, from, and between points in southern territory by the cancellation of existing commodity rates and the establishment of seventh class rates, except in the peninsula of Florida where sixth class rates are generally in effect. The report recommends a finding that the proposed rates are generally reasonable except where departures from the long-and-short-haul rule of the fourth section would result as to certain rates.

Railways Must Pay Tax on Check Room Earnings

The nine railways which own the capital stock of the St. Paul Union Depot Company are required to pay a tax on the gross earnings of the company from the operation of its checking room, the Minnesota Supreme court has held in a case entitled Minnesota vs. Chicago, Rock Island & Pacific. The depot company is held to be an agency of the railways. The court also held that excess receipts earned by the Pullman Company and paid to a railway over which its cars are operated, are not taxable to the railway, since the Pullman Company itself pays a tax on such receipts.

Rock Island Charter in Missouri

The Chicago, Rock Island & Pacific has filed a petition with the Missouri Supreme Court at Jefferson City, Mo., for a mandamus to compel Secretary of State Charles U. Becker to extend and renew its charter to operate in Missouri. According to the petition, Mr. Becker refused to approve the renewal of the charter when the railroad on June 3, filed an application for an increase in its capital stock from $140,000,000 to $170,000,000. The railroad points out that it has complied with all of the Missouri laws and state regulations. It avers that the reason for refusing the renewal is the secretary's insistence that he must collect fees based upon the entire capital stocks as if the railroad were newly incorporated and first seeking a Missouri charter.

Porters Seek Injunction Against Pullman

A petition for an injunction to restrain the Pullman Company from interfering with the right of porters and maids to select and designate their representatives in negotiations concerning wages and working conditions was filed by the Brotherhood of Sleeping Car Porters in the United States District Court at Chicago on October 14. The petition asserts the right of the 8,000 members of the organization and the 3,000 sleeping car employees of the Pullman Company who are not members to self organization and asks that the Pullman Company be restrained from continuing to maintain its present plan of employee representation through which it is charged that the company controls the selection of representatives and the presentation of complaints in a manner not contemplated by the Railway Labor Act.

R. B. A. Meeting Program

Addresses by Elisha Lee, vice-president of the Pennsylvania, Samuel G. Botsford, executive vice-president, Buffalo Chamber of Commerce and Virgil Jordan, economist of "The Business Week," will be the features of the twenty-second annual dinner of the Railway Business Association to be held November 19 at the Commodore Hotel, New York. Mr. Lee will speak on "What Railroads and Business Should Expect from Each Other," Mr. Botsford on "Inland Waterways" and Mr. Jordan on "The Business Outlook."

The dinner will be preceded by business meetings throughout the day. These sessions will include reports of officers and committees and also the address of Harry C. Oviatt, vice-president, Manganese Track Society, who will speak on "Railway Shop Manufacturing."

Kansas Grain Men Organize

About 60 grain buyers and elevator men of southwest Kansas organized the Southwest Shippers and Producers Association at Dodge City, Kan., on October 10 to support the petition of the Hutchinson board of trade to re-open the grain rate case which the Interstate Commerce Commission recently closed when it applied a general reduction in grain rates. The petition filed with the Interstate Commerce Commission by the Hutchinson chamber of commerce asks for a lower export rate to the Gulf than from Kansas City, for proportional rates for Hutchinson, and that the break of three cents a hundred in wheat rates to the Gulf from Kansas points be moved north to, but not to include, the Union Pacific main line in Kansas. At present this break line runs from Liberal along the Chicago, Rock Island & Pacific to Hutchinson, then follows the main line of the Santa Fe to Kansas City. Points south of this break line have a rate of three cents a hundred lower to the south than do those on the north.

Railway Club Meetings

The St. Louis Railway Club will hold its next meeting at Hotel Statler, St. Louis, on Friday evening, November 14. The speaker will be J. J. Franco, general superintendent of transportation of the National Railways of Mexico, and his subject will be "My Country and My Railroad."

The New England Railway Club will hold its next meeting on Tuesday evening, November 4, at the Copley-Plaza Hotel, Boston. H. L. Miller of the Republic Steel Corporation will present a paper on the Thermal expansion of the locomotive boiler and its relation to failures of material. This meeting is held on the fourth because the regular date, November 11, will be a holiday.

The Railway Club of Pittsburgh (Pa.) will hold its next meeting on Thursday evening, October 23, at Fort Pitt Hotel, Pittsburgh. This will be the annual meeting for the election of officers. It will be followed by a program of entertainment, and will be preceded by the annual dinner.

Car Foremen of Chicago Hold Annual Meeting

The annual meeting of the Car Foremen's Association of Chicago was held at the Morrison hotel, Monday evening, October 13, over 800 members of the association, with their families and friends, being present. Preceding a program of entertainment and dancing, various reports were presented, including that of the secretary, which showed a healthy growth in membership, from 2,513 active members in 1929 to 3,810 active members in 1930.

The activities of the association during the past year have been under the direction of President F. J. Swanson, district master car builder, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn. New officers, elected for the ensuing year, include: President, G. R. Andersen, district master car builder, Chicago & North Western, Chicago; first vice-president, Joseph Grimmer, traveling car inspector, Elgin, Joliet & Eastern, Griffith, Ind. and second vice-president, M. E. Fitzgerald, general car inspector, Chicago & Eastern Illinois, Danville, Ill. C. J. Nelson, chief interchange inspector, The Chicago Car Interchange Bureau, Chicago, was re-elected treasurer, and George K. Oliver, passenger foreman, Chicago & Alton, Chicago, secretary.

Idaho Commission Seeks Reduction In Petroleum Rates

A hearing was held at Portland, Ore., from October 7 to 12, before Examiner Myron Witters, on the case of the Public Utilities Commission of Idaho versus the Oregon Short Line in which the commission asks for lower freight rates on petroleum and its products from all points into Idaho. During the course of the hearing, Henry J. Plumhof, general manager of the Oregon

Short Line, described the physical characteristics of the railroad from Cheyenne to Ogden to show how the difficulties of operation increased the cost of service. His testimony was supported by similar data given by W. R. Armstrong, general superintendent of the Los Angeles & Salt Lake, and M. G. Crawford, assistant general superintendent of transportation of the Northern Pacific, E. Stacey, assistant to the chief engineer of the Oregon Short Line, and F. N. Finch, general superintendent of the Oregon-Washington Railroad and Navigation Company. W. H. Prickett, representative of a number of Utah oil companies, maintained that a reduction of the freight rate would be reflected in the price of the commodity to the consumer. C. E. Blaine, who represented five California oil companies, declared his companies are not seeking a rate into Idaho which is lower than that applicable to Utah.

Frank W. Robinson, vice-president in charge of traffic of the Union Pacific,

(*Continued on page 826*)

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 171 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF AUGUST, 1930 AND 1929

Item	United States		Eastern District		Southern District		Western District	
	1930	1929	1930	1929	1930	1929	1930	1929
Average number of miles operated	242,629.39	242,528.88	60,276.98	60,143.82	46,094.29	46,112.94	136,258.12	136,272.12
Revenues:								
Freight	$354,713,054	$446,609,835	$144,594,316	$187,865,936	$60,793,836	$75,096,284	$149,324,902	$183,647,615
Passenger	[a] 67,432,287	[b] 84,315,156	38,097,013	46,461,496	7,212,474	9,907,668	22,122,800	27,945,992
Mail	8,868,423	[c] 11,198,432	3,440,737	4,950,030	1,453,441	1,808,378	3,974,245	4,440,024
Express	8,316,728	12,200,992	3,675,557	5,821,107	904,472	1,489,497	3,736,699	4,890,388
All other transportation	15,167,936	19,040,707	8,880,193	11,207,669	953,025	1,309,946	5,334,718	6,523,092
Incidental	11,031,452	12,912,893	5,529,706	6,139,862	1,183,379	1,266,746	4,318,367	5,506,285
Joint facility—Cr.	1,105,871	1,362,006	396,253	372,884	182,236	278,416	527,382	710,706
Joint facility—Dr.	265,315	317,608	82,842	80,773	30,101	38,760	152,372	198,075
Railway operating revenues	466,370,436	587,322,413	204,530,933	262,738,211	72,652,762	91,118,175	189,186,741	233,466,027
Expenses:								
Maintenance of way and structures	63,012,677	82,921,197	27,525,733	35,614,144	9,914,013	13,155,485	25,572,931	34,151,568
Maintenance of equipment	80,799,743	103,135,797	37,116,128	48,346,831	14,432,375	18,869,145	29,251,240	35,919,821
Traffic	10,309,799	10,913,666	3,913,060	4,314,934	1,943,381	1,900,556	4,453,358	4,698,176
Transportation	154,050,005	179,150,208	71,765,366	84,178,994	23,812,112	27,350,615	58,472,527	67,620,599
Miscellaneous operations	4,541,319	5,447,674	2,029,240	2,397,638	414,737	463,357	2,097,342	2,586,679
General	15,609,964	16,059,103	6,831,242	6,927,717	2,650,792	2,785,511	6,127,930	6,345,875
Transportation for investment—Cr.	1,119,211	1,422,700	201,216	375,101	80,055	143,676	837,940	903,923
Railway operating expenses	327,204,296	396,204,945	148,979,553	181,405,157	53,087,355	64,380,993	125,137,388	150,418,795
Net revenue from railway operations	139,166,140	191,117,468	55,551,380	81,333,054	19,565,407	26,737,182	64,049,353	83,047,232
Railway tax accruals	32,579,942	38,371,255	14,032,818	16,419,030	5,587,000	6,494,380	12,960,124	15,457,845
Uncollectible ry. revenues	52,176	79,674	17,406	27,023	11,883	28,042	22,887	24,609
Railway operating income	106,534,022	152,666,539	41,501,156	64,887,001	13,966,524	20,214,760	51,066,342	67,564,778
Equipment rents—Dr. balance	8,371,192	8,555,228	4,101,011	3,795,580	[d] 378,354	[d] 948,167	4,648,535	5,707,815
Joint facility rent—Dr. balance	2,558,908	2,352,812	1,484,867	1,331,614	256,395	212,844	817,646	808,354
Net railway operating income	95,603,922	141,758,499	35,915,278	59,759,807	14,088,483	20,950,083	45,600,161	61,048,609
Ratio of expenses to revenues (per cent)	70.16	67.46	72.84	69.04	73.07	70.66	66.14	64.43

FOR EIGHT MONTHS ENDED WITH AUGUST, 1930 AND 1929

Average number of miles operated	242,620.44	242,528.02	60,295.48	60,161.04	46,112.52	46,112.49	136,212.44	136,254.49
Revenues:								
Freight	$2,744,468,532	$3,186,785,711	$1,181,454,404	$1,388,858,981	$507,333,190	$577,689,649	$1,055,680,938	$1,220,237,081
Passenger	[e] 514,019,151	[f] 595,149,592	280,822,160	314,973,875	68,720,429	83,092,157	164,476,562	197,083,560
Mail	73,245,412	[g] 99,581,543	27,969,977	38,583,599	12,274,557	15,689,752	33,000,878	45,308,192
Express	77,091,161	95,269,041	34,379,939	43,485,210	11,444,649	14,987,424	31,266,573	36,796,407
All other transportation	120,300,672	141,668,446	69,904,784	81,552,064	8,851,413	10,439,460	41,544,475	49,676,922
Incidental	79,663,481	89,177,144	41,059,599	44,864,304	10,792,721	11,361,405	27,811,161	32,951,435
Joint facility—Cr.	8,844,428	8,658,893	3,003,021	2,780,203	1,581,418	1,394,809	4,259,989	4,483,881
Joint facility—Dr.	2,561,421	2,601,704	773,957	650,307	267,884	280,181	1,519,580	1,671,216
Railway operating revenues	3,615,071,416	4,213,688,666	1,637,819,927	1,914,447,929	620,730,493	714,374,475	1,356,520,996	1,584,866,262
Expenses:								
Maintenance of way and structures	502,748,832	579,085,870	209,531,232	239,206,219	88,692,053	102,572,486	204,525,547	237,307,165
Maintenance of equipment	709,719,976	807,753,734	328,307,824	382,063,249	127,892,169	143,630,218	253,519,983	282,060,267
Traffic	87,840,489	86,871,763	33,500,599	32,852,586	16,145,216	15,922,971	38,194,674	38,096,206
Transportation	1,273,795,997	1,400,862,191	600,459,279	660,396,839	204,959,402	224,079,130	468,377,316	516,386,222
Miscellaneous operations	36,375,353	39,544,760	17,052,240	18,003,083	4,410,515	4,485,328	14,912,598	17,056,349
General	130,550,317	129,612,411	57,224,210	56,142,415	22,091,231	22,192,869	51,234,876	51,277,127
Transportation for investment—Cr.	8,738,549	8,628,812	1,743,412	2,029,061	760,767	677,605	6,234,370	5,922,146
Railway operating expenses	2,732,292,415	3,035,101,917	1,244,331,972	1,386,635,330	463,429,819	512,205,397	1,024,530,624	1,136,261,190
Net revenue from railway operations	882,779,001	1,178,586,749	393,487,955	527,812,599	157,300,674	202,169,078	331,990,372	448,605,072
Railway tax accruals	244,889,276	270,647,132	101,820,009	113,368,667	45,894,504	49,882,813	97,174,763	107,395,652
Uncollectible ry. revenues	663,260	758,699	264,517	304,573	114,706	180,471	284,037	273,655
Railway operating income	637,226,465	907,180,918	291,403,429	414,139,359	111,291,464	152,105,794	234,531,572	340,935,765
Equipment rents—Dr. balance	64,100,759	62,087,565	32,639,805	33,043,192	1,220,891	[d] 683,543	30,240,063	29,727,916
Joint facility rent—Dr. balance	17,823,589	16,698,562	9,112,643	8,473,439	1,941,422	1,577,001	6,769,524	6,648,122
Net railway operating income	555,302,117	828,394,791	249,650,981	372,622,728	108,129,151	151,212,336	197,521,985	304,559,727
Ratio of expenses to revenues (per cent)	75.58	72.03	75.97	72.43	74.66	71.70	75.53	71.69

[a] Includes $3,334,898 sleeping and parlor car surcharge. [b] Includes $3,806,649 sleeping and parlor car surcharge. [c] Includes approximately $2,061,800 back mail pay. [d] Deficit or other reverse items. [e] Includes $24,967,527 sleeping and parlor car surcharge. [f] Includes $27,376,155 sleeping and parlor car surcharge. [g] Includes approximately $25,813,584 back mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission, Subject to revision

Operating Statistics of Large Steam Railways—Selected Items for August, 1930, Comp

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotives and tenders	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany....1930	407	146,804	155,870	14,485	4,264	66.5	221,868	78,613	89	36	29.0	34
1929	407	203,532	215,785	21,230	5,292	69.0	269,710	101,052	103	17	14.4	37
Boston & Maine....1930	2,066	348,477	395,050	53,686	11,441	69.4	600,689	233,800	246	52	17.3	55
1929	2,059	398,599	461,872	55,761	13,418	71.4	670,869	263,667	243	42	14.7	43
N. Y., New H. & Hart...1930	2,093	399,035	469,702	27,695	13,855	64.0	769,811	303,182	276	70	20.3	49
1929	2,103	512,703	585,586	38,971	17,131	68.1	906,781	369,433	274	59	17.6	8
Great Lakes Region:												
Delaware & Hudson....1930	875	302,248	395,058	38,971	10,208	64.8	601,412	279,437	240	32	11.8	108
1929	875	329,157	437,041	46,863	10,700	65.8	639,957	303,322	242	32	11.6	88
Del., Lack. & Western....1930	998	448,172	497,272	58,239	15,024	65.7	876,030	361,781	232	54	18.8	37
1929	998	489,538	536,126	59,978	18,283	71.6	972,923	410,535	243	50	17.0	29
Erie (inc. Chi. & Erie)....1930	2,316	826,515	886,150	66,755	37,092	61.2	2,268,835	873,325	391	95	19.5	85
1929	2,316	907,394	967,490	69,126	41,463	65.3	2,417,434	982,810	391	99	20.2	31
Grand Trunk Western....1930	1,020	235,451	238,379	4,592	6,572	63.1	378,302	137,762	77	30	27.9	43
1929	992	358,753	360,413	1,901	10,583	65.3	593,354	225,453	116	24	16.9	3
Lehigh Valley 1930	1,343	457,697	492,236	49,145	15,227	65.4	922,848	403,612	256	91	26.2	51
1929	1,344	549,531	602,963	73,083	17,934	66.5	1,067,968	473,310	273	83	23.3	53
Michigan Central 1930	1,865	426,458	427,419	14,244	14,252	60.2	834,315	304,690	165	50	23.2	54
1929	1,822	549,120	550,239	15,684	19,816	61.3	1,121,935	401,615	193	37	16.0	28
New York Central....1930	6,468	1,724,712	1,856,630	132,279	67,880	62.0	4,161,621	1,752,375	1,041	336	24.4	422
1929	6,467	2,031,006	2,243,290	159,265	82,739	63.3	4,994,616	2,152,242	981	286	22.6	209
New York, Chi. & St. L...1930	1,660	557,147	569,454	7,037	18,199	61.4	1,064,071	389,512	203	61	23.1	54
1929	1,665	679,974	689,746	8,255	23,106	65.1	1,296,166	501,943	201	64	24.2	19
Pere Marquette 1930	2,201	403,142	406,752	3,636	10,623	61.1	641,777	246,523	170	20	10.7	35
1929	2,178	514,128	517,572	5,672	13,459	63.1	797,519	341,290	184	28	13.1	..
Pitts. & Lake Erie....1930	231	103,433	104,564	1,448	4,281	61.8	344,625	199,552	61	9	12.9	29
1929	231	145,119	146,996	2,299	5,391	65.8	413,842	242,389	50	11	18.1	7
Wabash 1930	2,497	669,310	718,986	11,095	21,747	62.8	1,277,633	469,988	294	86	22.7	61
1929	2,497	911,130	954,326	20,246	28,609	64.4	1,652,025	632,197	293	63	17.8	18
Central Eastern Region:												
Baltimore & Ohio....1930	5,541	1,600,070	1,870,395	237,021	53,526	61.6	3,620,330	1,664,096	961	235	19.6	207
1929	5,536	2,061,101	2,344,665	296,812	65,338	62.9	4,327,257	2,042,768	1,011	162	13.8	99
Big Four Lines a....1930	2,712	727,664	754,686	20,355	22,857	61.5	1,482,182	682,169	293	167	36.3	34
1929	2,717	852,426	880,831	21,347	27,880	62.2	1,791,250	823,980	328	119	26.7	18
Central of New Jersey....1930	692	245,014	268,651	42,564	7,301	57.2	501,319	231,092	158	30	15.8	22
1929	691	277,376	298,061	48,662	8,190	59.3	535,820	243,881	180	26	12.5	33
Chicago & Eastern Ill....1930	946	199,883	200,640	3,016	5,549	64.5	333,803	143,168	100	51	33.7	39
1929	946	257,985	258,847	3,479	7,530	66.7	444,086	198,145	99	70	41.6	27
Elgin, Joliet & Eastern....1930	453	122,878	128,360	5,370	3,395	62.9	256,705	132,946	79	15	15.7	16
1929	453	147,247	155,658	6,984	4,384	66.3	325,267	171,266	76	12	13.3	...
Long Island 1930	400	46,335	49,757	11,511	676	62.0	47,212	17,440	37	11	23.1	4
1929	400	52,273	55,489	15,244	677	58.8	42,205	16,662	47	5	10.4	4
Pennsylvania System....1930	10,675	3,449,641	3,896,457	381,669	127,044	63.4	8,415,288	3,871,111	2,432	290	10.7	791
1929	10,738	4,168,787	4,782,456	458,135	153,116	64.6	10,237,419	4,885,116	2,516	338	11.8	545
Reading 1930	1,448	559,266	609,176	51,519	15,911	59.2	1,162,455	556,655	312	68	17.8	59
1929	1,451	611,677	668,922	50,384	17,976	62.0	1,212,099	596,011	330	62	15.8	56
Pocahontas Region:												
Chesapeake & Ohio....1930	3,086	1,146,380	1,221,270	55,329	43,850	56.0	3,653,957	1,975,555	536	104	16.3	106
1929	3,079	1,288,215	1,381,184	57,341	48,114	56.9	3,899,895	2,128,898	581	110	16.0	64
Norfolk & Western....1930	2,230	761,748	840,646	42,126	29,267	58.7	2,436,671	1,298,480	458	44	8.8	140
1929	2,230	907,549	1,014,051	41,461	36,246	59.1	3,063,043	1,659,465	466	52	10.0	100
Southern Region:												
Atlantic Coast Line....1930	5,160	526,002	527,611	7,418	12,842	63.9	700,284	263,151	384	73	16.0	120
1929	5,153	561,746	563,030	7,383	14,791	62.8	807,052	307,033	406	57	12.2	106
Central of Georgia....1930	1,900	242,658	243,958	3,538	5,868	68.8	313,539	123,918	122	31	20.1	3
1929	1,900	269,220	271,014	4,665	7,094	72.6	361,401	148,916	133	17	11.4	13
Ill. Cent. (inc. Y. & M. V.)1930	6,695	1,620,452	1,635,433	29,731	43,308	59.6	2,905,338	1,179,220	710	134	15.9	80
1929	6,695	1,940,148	1,954,644	29,671	56,011	64.5	3,553,107	1,507,264	732	113	13.4	22
Louisville & Nashville....1930	5,251	1,379,933	1,460,153	42,295	30,699	58.8	2,132,198	1,007,799	578	129	18.2	138
1929	5,247	1,630,185	1,731,852	54,104	36,915	60.1	2,521,841	1,210,987	588	117	16.6	47
Seaboard Air Line....1930	4,479	462,388	480,230	4,306	11,471	61.6	664,070	250,445	275	29	9.5	37
1929	4,475	489,583	509,214	8,107	12,520	65.3	688,927	273,759	270	47	14.8	19
Southern 1930	6,676	1,304,635	1,328,469	22,668	31,089	63.7	1,756,194	677,546	830	146	15.0	252
1929	6,679	1,439,220	1,471,951	29,106	37,394	66.7	2,036,968	829,417	833	126	13.1	192
Northwestern Region:												
Chi. & North Western....1930	8,459	1,393,363	1,469,723	28,602	35,771	58.8	2,303,820	859,499	756	91	10.7	114
1929	8,467	1,656,344	1,743,741	30,902	43,770	61.7	2,743,777	1,073,617	735	83	10.2	49
Chi. Gt. Western....1930	1,459	274,086	294,785	21,933	9,086	...	532,995	202,405	94	..	13.9	9
1929	1,459	304,556	358,978	32,842	10,292	...	608,533	244,882	120	..	22.3	19
Chi., Milw., St. P. & Pac..1930	11,313	1,598,365	1,705,355	92,145	45,866	60.3	2,932,061	1,222,477	818	125	13.3	246
1929	11,244	1,978,342	2,113,805	125,949	59,464	61.9	3,693,263	1,598,377	782	135	14.7	107
Chi., St. P., Minn. & Om..1930	1,724	336,585	375,660	14,811	6,971	63.7	423,844	178,765	149	25	14.6	26
1929	1,724	380,417	424,182	17,557	8,380	71.1	478,387	218,117	149	23	13.4	14
Great Northern 1930	8,338	884,006	894,215	36,001	33,421	64.2	2,206,337	1,101,210	466	161	25.7	74
1929	8,344	998,562	1,030,265	68,936	38,904	61.8	2,545,820	1,237,337	444	161	26.6	30
Minn., St. P. & S. St. M...1930	4,351	453,546	466,617	5,519	13,174	65.7	770,371	354,303	170	52	23.3	21
1929	4,357	507,800	527,112	10,928	15,158	67.1	848,861	383,214	187	49	20.8	10
Northern Pacific 1930	6,469	750,513	800,548	51,818	24,209	64.8	1,449,879	603,027	404	113	21.9	39
1929	6,476	915,644	972,881	53,961	30,268	65.6	1,764,448	748,071	430	119	21.7	40
Oreg.-Wash. R. R. & Nav..1930	2,245	200,552	213,750	13,561	5,784	67.9	346,486	150,365	117	25	17.5	30
1929	2,246	231,924	244,907	18,978	7,153	68.5	421,590	188,323	124	10	7.4	16
Central Western Region:												
Atch., Top. & S. Fe (incl. P. & S. F.)....1930	11,263	1,712,165	1,836,276	86,252	55,649	62.9	3,403,200	1,196,397	785	154	16.4	215
1929	11,233	1,966,991	2,139,039	109,155	65,387	63.1	3,973,624	1,434,000	779	156	16.7	111
Chicago & Alton....1930	1,000	271,475	286,991	1,876	6,628	61.1	414,870	162,699	127	19	13.2	23
1929	1,000	326,920	350,657	3,301	8,339	62.5	502,361	199,598	122	23	16.0	8
Chi., Burl. & Quincy....1930	9,275	1,360,828	1,419,578	57,224	43,864	61.6	2,696,988	1,245,736	605	171	22.0	34
1929	9,317	1,531,215	1,615,986	71,466	50,662	63.0	3,033,872	1,395,276	689	161	19.0	28
Chi., Rock I. & Pacific....1930	7,593	1,274,925	1,322,113	12,647	32,855	62.3	2,037,456	838,534	544	133	19.6	108
1929	7,548	1,611,703	1,702,185	18,206	39,117	63.1	2,382,590	1,004,767	556	112	16.8	29
Denver & R. G. Wn....1930	2,562	297,142	331,453	37,095	8,209	58.5	534,359	192,388	207	37	15.0	39
1929	2,564	274,528	322,180	53,116	8,409	68.2	491,875	211,079	228	44	16.0	32
Oregon Short Line....1930	2,539	286,881	295,651	19,330	8,592	62.8	529,359	208,756	169	13	7.3	60
1929	2,539	344,954	358,203	24,795	10,208	61.5	626,982	249,149	174	9	4.7	49
So. Pacific—Pacific Lines..1930	8,981	1,484,583	1,609,453	195,361	47,577	61.9	2,947,668	1,010,005	731	195	21.1	145
1929	8,710	1,748,264	1,912,124	271,630	54,201	63.2	3,348,713	1,234,206	730	165	18.4	75
Union Pacific 1930	3,765	1,231,383	1,258,740	67,029	43,978	59.2	2,771,818	920,204	407	40	8.9	81
1929	3,765	1,341,653	1,381,452	70,051	48,059	60.1	2,954,888	1,012,892	400	46	10.3	57
Southwestern Region:												
Gulf, Colo. & S. Fe....1930	1,965	224,919	238,945	6,899	8,024	61.7	538,993	240,876	111	13	10.1	25
1929	1,933	261,913	275,651	6,112	8,903	63.5	584,077	269,222	110	15	12.1	14
Mo.-Kans.-Texas Lines....1930	3,176	392,248	398,682	7,648	12,605	59.0	772,727	304,767	164	75	31.4	64
1929	3,176	467,014	475,912	9,258	16,015	59.3	962,033	374,316	190	45	19.3	71
Missouri Pacific 1930	7,423	1,402,251	1,442,556	38,650	41,277	60.2	2,674,282	1,086,555	547	87	13.7	169
1929	7,433	1,487,051	1,552,309	48,840	44,721	64.6	2,668,697	1,127,094	547	79	12.7	122
St. Louis-San Francisco....1930	5,213	742,262	753,537	7,986	19,323	59.4	1,191,097	460,023	363	84	18.8	51
1929	5,213	928,623	945,779	10,573	23,465	62.0	1,413,368	586,565	394	67	14.6	38
Texas & New Orleans....1930	4,701	610,814	612,902	2,338	15,326	64.0	921,671	361,434	270	59	18.0	70
1929	4,709	765,023	766,447	1,262	17,642	65.6	1,037,239	412,701	285	52	15.4	58
Texas & Pacific....1930	1,951	378,420	378,420	3,087	10,300	59.3	657,401	247,980	201	39	16.3	47
1929	2,011	426,944	426,944	7,494	11,446	62.3	699,186	272,462	191	18	8.6	26

Compiled by Bureau of Statistics Interstate Commerce Commission. Subject to Revision

ared with August, 1929, for Roads with Annual Operating Revenue Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany.....1930	3,181	3,460	6,641	7.2	20,704	1,511	535	18.4	382	31.1	6,229	148	44.0
1929	3,062	5,228	8,290	10.0	18,765	1,325	496	19.1	393	29.8	8,007	162	63.3
Boston & Maine.....1930	11,335	8,536	19,871	7.2	21,058	1,724	671	20.4	380	26.7	3,650	101	48.7
1929	9,951	11,991	21,942	6.5	20,311	1,683	661	19.7	388	27.6	4,131	107	58.7
N. Y., New H. & Hart..1930	18,253	13,354	31,607	14.1	23,929	1,929	760	21.9	309	22.1	4,672	99	46.4
1929	14,711	15,910	30,621	9.3	22,210	1,769	721	21.6	389	26.5	5,667	102	60.5
Great Lakes Region:													
Delaware & Hudson.....1930	10,038	4,402	14,440	4.2	26,090	1,990	925	27.4	624	35.2	10,299	114	51.5
1929	9,720	5,719	15,439	4.3	24,945	1,944	922	28.3	634	34.0	11,183	127	57.0
Del., Lack. & Western...1930	18,082	5,504	23,586	5.6	25,244	1,955	807	24.1	495	31.3	11,692	126	62.8
1929	15,073	8,361	23,434	5.1	25,138	1,987	839	22.5	565	35.1	13,268	125	65.6
Erie (inc. Chi. & Erie)..1930	36,360	16,320	52,680	4.1	38,389	2,745	1,057	23.5	535	37.1	12,164	97	63.2
1929	28,371	21,616	49,987	5.2	34,716	2,664	1,083	23.7	634	41.0	13,688	102	68.2
Grand Trunk Western...1930	4,612	9,763	14,375	6.8	23,886	1,607	585	21.0	309	23.4	4,358	95	73.0
1929	3,057	14,237	17,294	5.7	21,766	1,654	628	21.3	421	30.2	7,335	99	83.6
Lehigh Valley 1930	20,345	8,040	28,385	8.4	28,244	2,016	882	26.5	459	26.5	9,696	127	50.4
1929	19,774	10,416	30,190	7.0	27,204	1,943	861	26.4	506	28.8	11,365	135	61.3
Michigan Central.....1930	24,116	13,409	37,525	4.9	33,473	1,956	714	21.4	262	20.3	5,269	94	66.5
1929	14,898	17,265	32,163	5.4	32,640	2,043	731	20.3	403	32.4	7,110	99	79.5
New York Central.....1930	76,842	63,695	140,537	6.0	32,679	2,413	1,016	25.8	402	25.1	8,740	93	46.6
1929	59,718	83,202	142,920	4.3	32,124	2,459	1,060	26.0	486	29.5	10,736	95	61.2
New York, Chi. & St. L..1930	15,491	9,004	24,495	9.3	28,962	1,910	699	21.4	513	39.1	7,568	92	70.5
1929	12,198	12,120	24,318	7.0	26,724	1,906	738	21.7	666	47.1	9,726	96	84.9
Pere Marquette 1930	9,516	5,931	15,447	4.1	23,097	1,592	612	23.2	515	36.3	3,614	85	69.6
1929	9,092	10,449	19,541	3.9	20,557	1,551	664	25.4	563	35.2	5,055	94	79.6
Pitts. & Lake Erie.....1930	17,497	5,548	23,045	6.2	42,104	3,332	1,929	46.6	279	9.7	27,841	89	48.9
1929	10,978	10,172	21,150	5.4	32,793	2,852	1,670	45.0	370	12.5	33,809	100	78.4
Wabash 1930	18,873	9,942	28,815	3.4	31,318	1,909	702	21.6	526	38.8	6,073	101	61.9
1929	13,886	15,871	29,757	2.5	29,557	1,813	694	22.1	685	48.2	8,169	105	88.2
Central Eastern Region:													
Baltimore & Ohio.....1930	80,162	25,059	105,221	5.2	26,137	2,263	1,040	31.1	510	26.0	9,689	129	56.8
1929	67,473	34,561	102,034	5.9	23,351	2,099	991	31.3	646	32.9	11,902	130	72.6
Big Four Lines[a] 1930	24,146	22,718	46,864	3.4	30,938	2,037	937	29.8	470	25.6	8,115	102	54.4
1929	19,698	24,018	43,716	4.9	28,591	2,101	967	29.6	608	33.1	9,781	102	65.1
Central of New Jersey...1930	17,303	9,379	26,682	7.6	25,381	2,046	943	31.7	279	15.4	10,768	130	53.7
1929	16,606	10,955	27,561	6.3	22,958	1,932	879	29.8	285	16.2	11,393	138	54.4
Chicago & Eastern Ill....1930	13,226	3,660	16,886	45.3	26,619	1,670	716	25.8	274	16.4	4,881	114	43.7
1929	12,518	5,238	17,756	41.5	24,894	1,721	768	26.3	360	20.5	6,755	110	50.1
Elgin, Joliet & Eastern..1930	9,547	5,382	14,929	4.5	16,765	2,089	1,082	39.2	287	11.7	9,471	108	45.9
1929	8,260	8,306	16,566	9.1	16,170	2,209	1,163	39.1	333	12.9	12,190	115	59.6
Long Island 1930	763	4,894	5,657	1.0	7,481	1,019	376	25.8	99	7.4	1,405	267	40.8
1929	930	4,169	5,099	1.3	5,886	807	319	24.6	105	7.3	1,343	350	43.9
Pennsylvania System.....1930	229,498	73,972	303,470	4.3	30,221	2,439	1,122	30.5	411	21.3	11,698	112	50.7
1929	203,143	90,770	293,913	5.3	28,825	2,456	1,172	31.9	536	26.0	14,675	113	59.2
Reading 1930	32,871	10,584	43,455	4.8	23,311	2,079	995	35.0	413	19.9	12,404	127	56.2
1929	27,100	14,271	41,371	5.8	21,868	1,982	974	33.2	465	22.6	13,249	132	59.3
Pocahontas Region:													
Chesapeake & Ohio.....1930	41,904	10,674	52,578	2.5	40,896	3,187	1,723	45.1	1,212	48.0	20,650	77	64.4
1929	34,860	16,508	51,368	2.7	37,434	3,027	1,653	44.3	1,337	53.1	22,304	79	67.2
Norfolk & Western.....1930	34,081	7,279	41,360	1.0	45,088	3,199	1,705	44.4	1,013	38.9	18,783	105	56.7
1929	27,451	9,994	37,445	1.0	45,290	3,375	1,829	45.8	1,430	52.8	24,004	108	65.7
Southern Region:													
Atlantic Coast Line.....1930	24,212	5,191	29,403	6.6	19,768	1,331	500	20.5	289	22.0	1,645	105	37.8
1929	20,189	5,631	25,820	6.7	20,530	1,437	547	20.8	384	29.4	1,922	100	39.8
Central of Georgia.....1930	6,171	2,905	9,076	11.0	19,119	1,292	511	21.1	440	30.3	2,104	121	52.5
1929	4,041	4,158	8,199	6.4	19,013	1,342	553	21.0	586	38.4	2,528	127	59.3
Ill. Cent. (inc. Y. & M. V.)1930	49,215	17,530	66,745	6.0	25,772	1,793	728	27.2	570	35.1	5,682	118	63.6
1929	38,316	22,673	60,989	4.4	25,023	1,831	777	26.9	797	46.0	7,263	117	75.8
Louisville & Nashville....1930	48,724	11,130	59,854	10.5	22,515	1,545	730	32.8	543	28.1	6,191	133	68.6
1929	42,835	15,306	58,141	10.7	20,621	1,547	743	32.8	672	34.1	7,445	124	81.8
Seaboard Air Line.....1930	14,962	4,676	19,638	3.9	19,494	1,436	542	21.8	411	30.6	1,804	123	51.4
1929	14,684	5,732	20,416	7.2	18,884	1,407	559	21.9	433	30.3	1,973	124	52.6
Southern 1930	53,749	13,372	67,121	13.3	20,206	1,436	519	21 8	326	23.4	3,274	140	44.7
1929	47,567	16,966	64,533	10.8	20,288	1,415	576	22.2	415	28.0	4,006	143	50.5
Northwestern Region:													
Chi. & North Western...1930	50,112	25,164	75,276	7.4	22,468	1,653	617	24.0	368	26.1	3,278	110	57.1
1929	45,933	33,302	79,235	6.5	21,376	1,657	648	24.5	437	28.9	4,090	112	70.0
Chi. Gt. Western.....1930	3,524	4,466	7,990	6.6	1,945	29,429	738	22.3	763	55.4	4,475	115	94.4
1929	3,932	5,984	9,916	6.8	1,998	27,472	804	23.8	742	48.2	5,414	120	88.7
Chi., Milw., St. P. & Pac..1930	58,268	18,168	76,436	2.6	25,034	1,834	765	26.7	516	32.1	3,486	107	61.5
1929	49,037	32,538	81,575	2.7	23,776	1,867	808	26.9	632	38.0	4,586	113	78.8
Chi., St. P., Minn. & Om..1930	2,523	9,992	12,515	7.8	17,390	1,259	531	25.6	461	28.2	3,346	104	72.5
1929	2,195	10,561	12,756	6.3	16,527	1,258	573	26.0	552	29.8	4,082	108	82.8
Great Northern 1930	42,318	12,276	54,594	5.4	31,498	2,496	1,246	32.9	651	30.8	4,260	97	47.9
1929	40,192	18,060	58,252	4.8	31,072	2,549	1,239	31.8	685	34.9	4,784	106	58.6
Minn., St. P. & S. St. M..1930	20,017	4,753	24,770	3.5	21,798	1,699	781	26.9	464	26.3	2,627	84	68.9
1929	19,639	7,269	26,908	3.3	20,092	1,672	755	25.3	465	27.4	2,837	90	73.5
Northern Pacific.....1930	40,967	6,411	47,378	9.3	26,230	1,932	803	24.9	411	25.4	3,007	126	53.2
1929	36,374	10,060	46,434	7.6	25,500	1,927	817	24.7	520	32.0	3,726	130	60.3
Ore.-Wash. R.R. & Nav..1930	8,079	4,204	12,283	4.1	23,553	1,728	750	26.0	395	22.4	2,160	140	51.6
1929	7,437	7,117	14,554	3.3	23,025	1,818	812	26.3	417	23.2	2,705	142	63.6
Central Western Region:													
Atch., Top. & S. Fe (incl. 1930	66,286	15,761	82,047	7.3	32,437	1,988	699	21.5	470	34.8	3,426	95	66.1
P. & S. F.).....1929	57,271	27,207	84,478	5.2	30,448	2,020	729	21.9	548	39.6	4,118	100	77.6
Chicago & Alton.....1930	10,300	4,681	14,981	6.1	24,759	1,528	599	24.5	350	23.4	5,250	113	63.8
1929	9,399	5,154	14,553	4.5	23,326	1,537	611	23.9	442	29.6	6,440	125	78.6
Chi., Burl. & Quincy....1930	45,010	19,762	64,772	5.3	27,278	1,982	915	28.4	620	35.5	4,333	105	61.4
1929	41,189	27,169	68,358	5.0	26,049	1,981	911	27.5	658	37.9	4,831	110	64.0
Chi., Rock I. & Pacific..1930	35,816	16,087	51,903	8.6	22,933	1,598	658	25.5	521	32.8	3,563	120	63.7
1929	28,395	26,649	55,044	5.5	20,002	1,478	623	25.7	589	36.3	4,294	129	83.0
Denver & R. G. Wn.....1930	12,475	5,291	17,766	2.2	24,156	1,798	647	23.4	349	25.5	2,423	152	48.8
1929	10,651	5,831	16,482	2.9	20,760	1,792	769	25.1	413	24.1	2,656	157	44.7
Oregon Short Line.....1930	8,055	3,550	11,605	5.3	26,810	1,845	728	24.3	580	38.0	2,652	98	55.8
1929	6,939	5,520	12,459	5.4	25,865	1,818	722	24.4	645	43.0	3,166	107	67.8
So. Pacific—Pacific Lines.1930	41,020	26,110	67,130	4.7	26,882	1,986	680	21.2	485	36.9	3,628	111	62.9
1929	37,601	33,137	70,738	5.2	24,866	1,915	706	22.8	563	39.1	4,571	113	78.7
Union Pacific 1930	23,542	11,797	35,339	6.3	41,952	2,251	747	20.9	840	67.8	7,883	95	95.7
1929	21,420	12,402	33,822	3.8	39,655	2,202	755	21.1	966	76.3	8,677	99	105.0
Southwestern Region:													
Gulf, Colo. & S. Fe....1930	11,997	3,409	15,406	3.1	35,652	2,396	1,071	30.0	504	27.2	3,954	83	64.4
1929	12,372	6,990	19,362	3.6	31,259	2,230	1,028	30.2	449	23.4	4,493	88	72.5
Mo.-Kans.-Texas Lines...1930	17,111	6,376	23,487	4.6	29,441	1,970	777	24.2	419	29.3	3,095	80	54.9
1929	15,797	8,705	24,502	6.0	28,738	2,060	802	23.4	493	35.6	3,801	87	66.4
Missouri Pacific 1930	31,171	18,804	49,975	10.5	28,448	1,907	775	26.3	701	44.3	4,722	108	75.4
1929	27,768	26,347	54,115	5.1	24,529	1,795	758	25.2	672	41.3	4,891	117	82.5
St. Louis-San Francisco..1930	26,167	7,774	33,941	3.3	1,605	1,605	620	23.8	437	30.9	2,847	135	55.0
1929	21,984	11,046	33,030	3.5	20,366	1,522	632	25.0	573	37.0	3,630	130	66.9
Texas & New Orleans...1930	11,827	13,567	25,394	4.8	21,437	1,509	592	23.6	459	30.4	2,480	90	60.2
1929	10,778	15,206	25,984	4.2	19,526	1,356	539	23.4	512	33.4	2,827	92	73.6
Texas & Pacific.....1930	6,218	4,556	10,774	6.9	26,789	1,737	655	24.1	742	52.0	4,100	83	51.1
1929	5,028	7,768	12,796	5.8	22,820	1,638	638	23.8	687	46.3	4,371	87	67.1

News

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told of the losses his road had suffered in freight revenues through orders of the Interstate Commerce Commission and by the increasing business of motor trucks and coaches. The cost of carrying petroleum products now and in the future depends, among other things, upon the total traffic over which the entire transportation expense is spread, he said. He testified that the Union Pacific now is not handling freight traffic from jobbing points to distances within 100 miles and that much livestock traffic is also being handled by truck. He said that 47 per cent of the automobiles manufactured in this country are driven or trucked away from the factories or handled by steamships on the great lakes. He also mentioned the installation of pipe lines to carry refined petroleum products from oil centers to the big cities as another agency responsible for the diversion of traffic from the railroads.

C. N. R. to Aid Employment

Construction projects in various sections of Canada are to be undertaken by the Canadian National Railways, by arrangement with the Dominion Government, for the purpose of providing employment and stimulating business activities over a wide area.

Thousands of men will be provided with work through the plans announced today by the railway. Among the projects to be proceeded with is a station at Saint John, N. B.

In addition, it was announced that it was the intention of the railway to place orders for rather more rails and ties than was originally contemplated and the orders, to take care of the needs of the coming year, will be placed shortly.

The announcement says that the program laid down provides for payment by the Dominion government of interest charges involved, for a certain length of time, as outlined recently at Ottawa by Hon. G. D. Robertson, Minister of Labor. The projects were approved by the government in a recent conference with the company and are in addition to the program which the company had already arranged to commence this fall and winter, and also in addition to the extensive works now in progress which will be carried through to completion.

In connection with the Saint John station, the announcement said: "The Canadian National Railways have recently constructed a new train shed and an office, baggage and mail express wing. It is now proposed to build the headhouse of the station proper."

Grade Separation Progresses in New York State

A total of 818 grade crossings have been ordered eliminated by the Public Service Commission of New York since the grade crossing elimination act became effective, it was reported by the commission on October 10.

These crossings were ordered eliminated in 471 orders adopted by the commission, at an estimated cost of $111,301,240.

The Commission has started 940 elimination proceedings, involving 1,624 crossings, and has held 2,441 hearings in these cases. A total of 430 proceedings, involving 555 crossings, have been closed.

Of the 471 elimination orders which have been adopted, 166 projects have been completed and the work formally approved. These completed projects have eliminated 233 crossings at an estimated cost of $6,555,485. There are 80 projects now under contract, involving the elimination of 127 crossings, at an estimated cost of $14,963,770. In addition, nine projects are ready for contracts to be let and 216 projects are ready for letting contracts with the exception of a few details.

During the month of September, the commission ordered the elimination of 20 grade crossings at an estimated cost of $1,457,100. During the same month, the Commission held 33 hearings in grade crossing proceedings and closed 11 proceedings, involving 13 crossings. There were nine projects actually completed and approved during the month. These involved the elimination of 10 crossings at an estimated cost of $409,440. In addition, eight projects were placed under contract during the month.

Grade Crossing Elimination in Canada

Twenty applications are before the Board of Railway Commissioners of Canada for assistance under the grade crossing fund. Many of these had been left in abeyance because of the lack of money in the fund, but the board has now been instructed that a maximum of $1,000,000 will be available for this purpose out of the $20,000,000 Dominion unemployment fund.

Eight of the applications pending come from Winnipeg for two subways, each under Nairn avenue, Talbot street, Portage avenue and Academy road.

In the province of Ontario, one subway is asked at Howard avenue in Windsor, a bell and wigwag at Webster-side road and three subways in Toronto, two on St. Clair avenue and one at Lansdowne avenue.

Three applications come from Nova Scotia: A diversion at Hunt's Point, a subway at Hopewell and an overhead at Lawrencetown.

The applications from the province of Quebec are one road diversion at Levis, one subway and one diversion at Petite Cote road near Vaudreuil, a grade separation at St. Valliere street and a subway at Laviolette street, Three Rivers.

On September 1 of this year the amount at the credit of the grade crossing fund was $1,557,264, but of this $1,-236,800 had been committed for. This left a balance of slightly more than $300,000, which, along with the $1,000,-000 now added, will again bring the fund up to substantial proportions.

Regulations under which the fund is operated provide that the Railway Commission may grant out of it as much as 40 per cent. of the cost of any work for the removal of a level crossing, but not more than $100,000 for the removal of any one crossing. The remainder of the cost must be apportioned by the board between the municipality and the railway. Although the amount out of the fund for any one crossing is limited to $100,000, where a subway or viaduct eliminates two or more level crossings, $100,000 may be granted for each crossing eliminated.

Some Data Concerning Crossing Fatalities

John A. Droege, vice-president of the New York, New Haven & Hartford, speaking at the meeting of the New England Shippers' Advisory Board at Maplewood, N. H. last month, made a strong appeal to his audience—leading merchants and manufacturers of the six New England states—to do their part in educating automobile drivers to exercise care at all times in traveling on the highways. Active interest on the part of informed public spirited citizens, he said, is necessary to counteract the work of demagogic politicians and "single-track editors."

Calling attention to the fact that the frequency of automobile accidents (on the highway as a whole, not alone at railroad crossings) is not so bad in New England as in the rest of the country, the speaker told of what the railroads had done in the way of prevention of automobile accidents. The New Haven road has put 46 per cent of the highways it encounters either above or below the tracks, and 49 per cent of the crossings at grade on that road in New England have some protection beyond the ordinary notification sign. Of the 361 accidents at crossings on the New Haven road in 1929, 257 were where vehicles on the highway were run into trains, or struck crossing watchmen or ran through gates.

The New Haven has set up flashing light signals in some of its large passenger stations as a means of educating the public, and each of these signals has flashed over thirty million times without any failure. This number of times represents a service of 52 years on a busy railroad or perhaps 100 years on an average single-track line. No person was killed at any of the New Haven grade crossings in the 183 days ending May 31 last.

In the state of Massachusetts in the month of July last, violations of the motor vehicle laws constituted 35 per cent of the criminal business of the courts. Of the 5,166 offenders, 472 were charged with operating while under the influence of liquor.

Mr. Droege called attention to the need of more license laws for automobile drivers. Only 17 states have such laws at present. There is need of better examinations to get rid of the dangers

of color-blindness in drivers, and the inspection of cars ought to be made more strict, only one car out of nine having passed inspection in a recent test in Connecticut. The careless maintenance of automobiles, evidenced by this fact, may partly explain, said the speaker, why travel by rail is 75 times as safe as by highway vehicles and 200 times as safe as by airplanes. Finally, from the railroad man's point of view, it seems fair to ask, in connection with the constant clamor for the separation of grades why there is no such demand for separation where one highway crosses another, both being lines of heavy traffic. Half of all the automobile accidents occur at these intersections of one street with another.

Canadian Newsprint Rate Case

Argument on the application of Canadian newsprint interests against the increase of freight rates on that commodity were heard last week at Ottawa by the Board of Railway Commissioners. Guy Tombs of Montreal, representing a group of newsprint manufacturers, accupied an entire day giving evidence under examination by George Montgomery, of Montreal, and being cross-examined by Alistair Fraser, general counsel for the Canadian National.

The hearings have arisen out of the increased rates on newsprint published by the railways some time ago, this increase affecting only such traffic as originated in Canada and had its destination in the United States. Inasmuch as such an increase affected also United States carriers, the question was argued, for the publishers and other newsprint users of that country, before the Interstate Commerce Commission. Hearings began before that body in 1928 and were ended last May. The I.C.C., has not yet rendered judgment. The Canadian hearings, before the Board of Railway Commissioners, were begun last spring and will continue for some time yet.

Evidence last week was extremely technical, ranging all the way from the grade and temperature of various stations on the Canadian National to the price of newsprint f.o.b. New York. In connection with the latter, a discussion centered upon whether the producer or the consumer paid the freight. The price of newsprint f.o.b. mill in Grand'Mere group was $55.20 per ton, but was quoted at $62.00 New York, "freight included." Mr. Tombs argued that the freight was paid by the producer, and Mr. Fraser that the consumer paid it. The two agreed to differ.

Asked whether he considered that newsprint should be carried at a rate lower than hay, Mr. Tombs answered in the affirmative.

Should the suspended increase in freight rates on newsprint become effective, United States publishers would look elsewhere than Canada for their sources of supply, W. J. Mathey, representative of several groups of newsprint users in the New England States and the mid-west, told the Board.

As far as the absorption of the increase by the publishers was concerned, they could certainly look to other sources of supply, said Mr. Mathey. General costs in the publication of newspapers had greatly increased in recent years, and for reasons of economy there had been many newspaper mergers in the United States. These had resulted in a diminution in the amount of newsprint used.

There were four other sources of supply, witness went on, which were not affected by increased railway transportation charges, but were, largely accessible by water. Mr. Mathey cited Europe as the first.

The United States railway companies have invited the Canadian carriers to cooperate with them in securing authority to increase freight rates up to the "K-2 scale," but the Canadian National is unwilling to join in this demand in the belief that the K-2 scale is too high. This was told to the Board of Railway Commissioners at Ottawa this week by Alistair Fraser, general counsel for the C.N.R., when the board continued its hearing of the protest, lodged by several newsprint manufacturers and users, against the projected increase in freight rates on traffic originating in Canada and destined to United States points.

The Canadians, said Mr. Fraser, refused to establish the K-2 scale because the Dominion railways "want a lower rate." Mr. Fraser illustrated several points raised. From Berlin, N. H., to Memphis, Tenn., the rate on newsprint was 77 cents. Under the K-2 scale, from Grand'Mere, Que., to Memphis, the rate was 74½ cents. The distance from Berlin to Cairo, in the southern states, was 1,274 miles, and from Berlin to Memphis, 1,436 miles. The difference from Berlin to Memphis or Cairo and Grand'Mere to Memphis or Cairo was 162 miles. The southern lines wanted the Canadian carriers to take a rate to Cairo and add to it, for the 152 miles, 15½ cents. The Canadian scale from Grand'Mere to Cairo was 59 cents: thus the United States roads wanted to raise this to 74½ cents for the additional mileage to Memphis.

Between Jonquieres Que., and Grand'Mere, a distance of 257 miles, the Canadian roads charged only 6½ cents, said Mr. Fraser. In answer to the Canadian National representations seeking co-operation for a new scale, the United States roads had stipulated they would associate themselves in the request, provided that the new rate was not lower than the existing rate, and that the K-2 scale applied all the way through.

THE "CATERPILLAR" FOR RAILROADS.—The Caterpillar Tractor Co., Peoria, Ill., has recently issued a folder bearing this title which is devoted principally to a pictorial description of the ditching work that was recently carried out on the Peoria & Pekin Union, using Caterpillar tractors in conjunction with ditching and grading equipment.

Foreign

Western Australian Government Railways in 1929-1930

The Western Australian Government Railways, for the year ending June 30, 1930, reported a deficit equivalent to $1,965,817 after interest charges as compared with a deficit of $868,477 for the year ending June 30, 1929 and a surplus of $129,621 in 1927-28. Gross revenues in 1929-30 were $17,783,727, operating expenses, $15,128,670 and interest charges $4,620,873 — respective 1928-29 figures were: Revenues, $18,466,853; expenses $14,849,468 and interest $4,485,863.

It will thus be seen from the foregoing that while revenues during the past year declined $683,126 as compared with the previous fiscal period, expenses increased by $279,202 and interest charges rose $135,011 to bring the deficit to more than twice that of the previous year.

Decreases in both passenger and freight traffic were responsible for the lower revenue figure, the passengers carried being 729,742 less than in 1928-29 and the freight handled dropping 153,904 tons. While the decline in the average revenue per ton-mile no doubt contributed also to the lower gross, this factor was somewhat offset by the increase of 2.53 miles in the average haul per ton of freight carried. The increased interest charges may be attributed to the rise of £418,881 in the amount charged to capital account during the year. Applying the additional interest charges to this new capital, a rate of more than 6½ per cent on the new financing is indicated. At the close of the year the total capital invested in the 4,111 miles of line open to traffic amounted to £23,615,489, or an average of £5,744 per mile. During the year under review, 14,175,175 passengers were carried as compared with 14,904,917 in the previous year and 4,051,420 long tons of freight and live stock were hauled as compared with 4,205,324 in 1928-29. The past year is the first since 1925 when there has been any serious decline in freight traffic, although passenger traffic has been declining steadily over this period. The principal commodity handled in freight services is wheat which accounted for 24 per cent of the 1929-30 tonnage. This class of traffic declined approximately 5,000 tons last year, while other substantial declines were in tonnages of hay, straw and chaff, fruit and vegetables, miscellaneous traffic, including cres and minerals, and local timber. The largest declines were in the latter two since miscellaneous traffic fell off 59,000 tons and local timber dropped approximately 55,000 tons. This local timber is evidently a declining source of traffic, since in 1928-29 the tonnage of it fell nearly 100,000 as compared with 1927-28.

At the close of the year the equipment of these lines included 413 locomotives, 489 passenger cars and 23,889 units of freight equipment. The number of employees on June 30 was 9,011.

Equipment and Supplies

Locomotives

THE DULUTH, MISSABE & NORTHERN is inquiring for three locomotive tenders.

THE COOS BAY LUMBER COMPANY has ordered one 2-8-2 type locomotive from the American Locomotive Company. This locomotive will have 20 by 24-in. cylinders and a total weight in working order of 196,000 lb.

Freight Cars

THE CHICAGO GREAT WESTERN has ordered 500 box cars of 50 tons' capacity from the Pullman Car & Manufacturing Corporation.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION has ordered 50 air dump cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of August 9.

Passenger Cars

THE INDIANA SERVICE CORPORATION, Fort Wayne, Ind., is inquiring for 25 interurban cars.

Iron and Steel

THE DELAWARE & HUDSON has ordered 12,500 tons of rails from the Bethlehem Steel Company.

THE KANSAS CITY SOUTHERN has divided orders for 8,000 tons of rails among the Illinois Steel Company, the Inland Steel Company, and the Bethlehem Steel Company.

THE TEXAS & PACIFIC has ordered 160 tons of structural steel for a bridge at Texarkana, Tex. from the Virginia Bridge Company.

THE GREAT NORTHERN has ordered 10,000 tons of rails, distributed 4,000 to the Illinois Steel Company, 2,000 to the Inland Steel Company and 4,000 to the Bethlehem Steel Company.

Signaling

THE CHICAGO GREAT WESTERN has ordered from the Union Switch & Signal Company material for the installation of centralized traffic control on its line between Winston, Ill., and Rice, a distance of 1½ miles. The control station will be located about midway between the two stations.

Miscellaneous

THE CHICAGO & NORTH WESTERN has ordered from the Ruby Railway Equipment Company, Philadelphia, Pa., a sufficient number of Vaughan gas switch heaters to equip the switches at the entrance to its terminal at Chicago, thus providing protection for 23 slip switches and 28 turnouts at a total estimated cost of $20,000. The Chicago Union Terminal Company has ordered from the same company, Vaughan gas heaters to equip 24 double slip switches and 16 turnouts in the vicinity of the Union station at a cost of about $25,000.

Trade Publications

A CONVERTIBLE MACHINE. — The Bucyrus-Erie Company, South Milwaukee Wis., has issued an attractively-illustrated booklet of 20 pages giving the details of design, a description of the applications and the specifications for its 1030, ¾-yd. machine, which is convertible to clamshell, lifting crane, shovel, dragline or drag shovel.

BULLDOZERS.—A well-illustrated and informative 20-page booklet, describing the complete line of bulldozers made by Williams, White & Co., Moline, Ill., has recently been printed and is being distributed by that company on request. The booklet opens with a page outlining a half-century of development from the first simple forming tool, built by Williams, White & Co. 50 years ago, to the present, sturdy, versatile and carefully engineered machines available in 12 sizes, from the smallest No. 0, 1½-ton dulldozer, with 8-in. stroke and 24-in. die space, to the largest No. 30 machine, having a 36-in. stroke, 82-in. die space and weighing 75 tons. Succeeding pages in the booklet illustrate bulldozers for many uses in various industries, including the railroads. The booklet, which gives general specifications and the principal dimensions of all dulldozers manufactured by Williams, White & Co., will be of material assistance to prospective purchasers in selecting the size and type of machine best suited to their respective requirements.

D. J. WELCH, at one time road foreman of engines for the Baltimore & Ohio, has been appointed railroad smoke-abatement supervisor for Indianapolis, Ind.

* * *

D., L. & W. Freight Train at Delaware Water Gap, Pa.

Supply Trade

C. S. Powers has been appointed district manager of the **Republic Steel Corporation** with headquarters at Tulsa, Okla.

The Stanley H. Smith Company, Cleveland, Ohio, has moved its offices from the Rockefeller building to suite 922 Midland Bank building.

The Republic Steel Corporation has consolidated its western and Chicago district sales offices, and has placed **H. S. Schoeder,** western manager of sales, in charge.

H. Glen Heedy, assistant to the vice-president of the **Youngstown Sheet & Tube Co.,** has resigned to become a representative of **Pickands Mather & Co.,** Cleveland, Ohio.

Purdom Railway Supplies, 1136 Straus building, Chicago, has been organized by **A. H. Purdom,** formerly sales engineer of the **Wood Conversion Company,** to handle railway supplies.

B. L. Donahue, representative of **Cutler-Hammer, Inc.,** with headquarters at Pittsburgh, Pa., has been promoted to manager of the Buffalo district office to succeed **B. A. Hansen,** resigned.

F. H. Maloney, manager of the St. Louis office of the **Truscon Steel Company,** Youngstown, Ohio, has resigned to become representative of the Campbell Industrial Window Company, New York.

W. W. Weller has been appointed New England sales manager of the **Adirondack Steel Foundries Corporation,** Watervliet, N. Y. Mr. Weller's office is in the Park Square building, Boston, Mass.

The Acheson Graphite Corporation, a unit of the **Union Carbide & Carbon Corporation,** after November 1, will have its entire line of Gredag lubricants distributed and sold by the Carbon sales division of the **National Carbon Company, Inc.,** Cleveland, Ohio.

The National Lock Washer Company has added a new modern four-story reinforced concrete building, with a floor area of 50,000 sq. ft., to its plant at Newark, N. J., to provide additional facilities primarily for the manufacture of car window equipment and for the machining of drop forgings.

Kenneth C. Gardner, for the past several years vice-president in charge of sales of the **Greenville Steel Car Company,** Greenville, Pa., has resigned effective November 1. Previous to his service with the Greenville Steel Car Company, Mr. Gardner was manager of sales for the Pressed Steel Car Company, at Pittsburgh.

J. T. Conners, district manager of the **Thew Shovel Company,** at Detroit,

Mich., has resigned to become a representative of the **American Hoist & Derrick Company,** and will have charge of "American Gopher" sales. The American Hoist & Derrick Company has moved its Dayton, Ohio, office to Indianapolis, Ind.

Lester N. Selig, who has been elected president of the **General American Tank Car Corporation** and the **General American Car Company,** Chicago, to succeed **Elias Mayer** resigned, was born in Brooklyn, N. Y. on September 10,

Lester N. Selig

1893, and graduated from the Brooklyn Law school. For a short time after graduation, he pursued the practice of law and in July, 1914, entered the employ of the General American Tank Car Corporation as a workman in its Warren, Ohio shops. After holding various positions, he was made assistant to the president, which position he has held until his recent promotion.

* * *

Grand Trunk Western Train No. 34 Leaving Bay City, Mich.

Construction

BOSTON & MAINE.—The Public Service Commission of New York has approved plans and an estimate of cost totaling $123,900 for the elimination of the Main and Burton street crossings of this company's tracks in Valley Falls, N. Y.

CANADIAN NATIONAL.—The general contract for the construction of a street subway under the tracks of this company at East Windsor, Ont., has been awarded to the Canada Paving & Supply Corp., Windsor, Ont., at a cost of about $178,000. The total expenditure involved in this project is about $285,000, which will be partly borne by the city.

PENNSYLVANIA.—A contract for structural additions and alterations and construction of a new train concourse and umbrella sheds at the Union passenger station at Columbus, Ohio has been awarded to Boyajohn & Barr, Columbus. A contract for the rearrangement of tracks and platforms and construction of a drainage system has been let to the Fritz-Rummer-Cooke Company, Columbus. This work is being undertaken in connection with the Cleveland, Cincinnati, Chicago & St. Louis, joint owner of the station.

CANADIAN NATIONAL.—Award of further contracts for construction of facilities included in the Canadian National terminal plan for Montreal were announced last week by C. B. Brown, chief engineer of the National System and engineer in charge of Montreal terminal development. These contracts concern construction of the main viaduct leading into the central passenger terminal from Victoria bridge. The contract was awarded to the Atlas Construction Company for the construction of that portion of the viaduct between the north side of St. Antoine street and the center line of St. Paul street. A separate contract was awarded to the Foundation Company of Canada for construction of the viaduct between the center line of St. Paul street and the south side of Ottawa street. This viaduct forms the southern approach to the new central passenger terminal and the portion for which contracts have now been awarded is approximately 2,000 feet in length and 112 feet wide. It consists of a reinforced concrete flat slab, two-story structure, the top deck or roof of which will carry eight railroad tracks set in rock ballast which will avert noise and dust from the trains which pass over it. The first and second floors of the viaduct will be available for occupancy as garages, warehouses, for storage and for light manufacturing and other purposes and will have heat, light, drainage and sanitary facilities.

CHESAPEAKE & OHIO. — This company has authorized the construction of an undergrade crossing at Magnolia street, Richmond, Va., at a probable cost of $25,550, and has awarded to J. A. Fix & Sons, Lynchburg, Va., a contract amounting to $153,460 for improvements to its locomotive shops at Clifton Forge, Va.

ERIE-LEHIGH VALLEY.—The Public Service Commission of New York has ordered the elimination of the William and South Ogden street crossings of the tracks of these companies in the city of Buffalo, N. Y. Elimination will be accomplished by depressing the grade and changing the alinement of William street, at a probable cost of about $1,200,000, of which nearly $300,000 will be for land damages.

GULF, MOBILE & NORTHERN.—Plans are being prepared for the construction of a terminal at New Orleans, La., to cost $1,250,000. The facilities to be installed include trackage, a roundhouse, a car repair shop and a machine shop for locomotive repairs.

NEW YORK CENTRAL.—The New York Public Service Commission has designated for elimination the Ridge road crossing of the New York Central and the Orchard Park highway crossing of the New York Central and Pennsylvania, both located in West Seneca, N. Y. The Ridge road crossing is to be eliminated by carrying the highway over the railroad tracks, at an estimated cost of $88,600, while the Orchard Park highway crossing will be eliminated in the same manner at a probable cost of $196,000. The commission has also approved plans and an estimate of cost of $111,700 for the elimination of the Culver avenue crossing of the West Shore in Utica, N. Y.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved plans submitted by this company showing the location of a new station on its Putnam division in Westchester County, N. Y. The new station is to be known as Bedford Road and will be at the point where the so-called Bedford road crosses the New York Central's relocated Putnam division. It is part of a change of line of that division between East View, N. Y., and Briarcliffe Manor, in connection with which stations at Tarrytown Heights, Tower Hill and Pocantico Hills are to be discontinued. It takes the place of the proposed Hawthorne station, which would have been about one mile south of the Bedford road site.

NEW YORK, NEW HAVEN & HARTFORD — This company has recently authorized the following projects: Elimination of a grade crossing at Noank, Conn., at an estimated cost of $74,400; the installation of additional fire protection for its car and locomotive shops at Readville, Mass., at a probable cost of $35,000, and the reconstruction of bridges Nos. 8.69 and 10.63 at Derby, Conn., at an estimated combined cost of $25,600. In connection with the grade separation work at Noank, a contract amounting to $38,000 has already been awarded to C. W. Blakeslee, New Haven, Conn., for the construction of the substructure, deck and approaches of the required bridge. A contract has also been awarded to the Austin Company, New York, for the construction, at a cost of about $133,000, of a warehouse

to be used by the Atlantic & Pacific Tea Company at Harlem River, N. Y. The New Haven has been authorized by the Public Service Commission of New York to use company forces for the work required in closing six grade crossings in Dutchess County, New York. The crossings to be thus eliminated are Champlins and Glenham roads, east of Glenham station, Fishkill; the School-House and Mulcay crossings southeast of Anson's station, Stanford, and the Hyatt and Hyde crossings south of Bangall station in the same town. The railroad has also reached an agreement with the municipal authorities of Port Chester, N. Y., for the reconstruction of a bridge at the point where its tracks cross the Boston Post road in that town. The work, which is not to be started for several months, will cost about $232,000, half of which will be borne by the railroad and half by the state.

NORTHERN PACIFIC.—This company plans to start the construction of a bridge across the Duwamish river at Seattle, Wash., in a short time, approval having been given by the War Department. The new bascule bridge will cost $327,000 and will form a part of the railway's rearrangement of its tracks in the industrial district of this city.

OREGON-WASHINGTON RAILROAD & NAVIGATION.—A contract has been awarded the J. F. Shea Contracting Co. for the construction of a tunnel at Rowena Point, Ore. The tunnel, which will cost approximately $190,000, will be double-tracked and concrete lined. The present tunnel at Rowena Point carries only a single track. The new bore will be 500 ft. long.

PENNSYLVANIA.—The New York Public Service Commission has designated for elimination the River road crossing of the Pennsylvania on the Rochester-Scottsville county highway about 1½ miles north of Scottsville station, Chili, N. Y. The elimination is to be accomplished by carrying the highway over the railroad at an estimated cost of $139,400. The Commission has also amended its order for the elimination of the Pennsylvania's Napier crossing on the Franklinville-Machias state highway about two miles north of Franklinville station, Farmersville, N. Y., to provide for depressing the grade of the highway below the elevated grade of the railroad.

SOUTHERN PACIFIC. — Plans have been prepared for the construction of a subway at Victory place in Burbank, Cal., for which the railroad will pay one-third of the cost. The remaining portion of the cost will be levied against Burbank and Los Angeles counties, while the cities of Los Angeles and Glendale will give some financial assistance.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority for the construction of a union station at East St. Louis, Ill., and the construction of about 6 miles of line connecting with it and with the Municipal Bridge; also for approval of a contract with the city of St. Louis for the use of the bridge.

Financial

CHICAGO GREAT WESTERN.— *Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability for $2,235,000 of its series A 4½ per cent equipment trust certificates maturing in installments from 1931 to 1945, the issue being authorized for sale to the highest bidder, Salomon Bros. & Hutzler, Chicago, at 98.03, making the average annual cost to the railroad 4.814 per cent.

CHICAGO & NORTH WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $12,000,000 of first and refunding mortgage 4½ per cent series C bonds to be sold to Kuhn Loeb & Co. at 97½, making the average annual cost to the railroad 4.62 per cent.

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment.*—This company and the St. Paul & Kansas City Short Line have applied to the Interstate Commerce Commission for authority to abandon a line of 5.69 miles from Pershing to Olmitz Mine No. 2, in Iowa.

GENESSEE & WYOMING VALLEY.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue a 5 per cent promissory note for $300,000 and pledge a $400,000 5 per cent bond as security therefor.

GEORGIA & FLORIDA.— *Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon parts of its Millen branch between Millen, Ga., and Garfield, 14 miles and from Graymont to Pendleton, 22.5.

LEHIGH & NEW ENGLAND.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $800,000 of 4½ per cent equipment trust certificates.

OKLAHOMA CITY-ADA-ATOKA.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire and operate the Oklahoma City-Shawnee Interurban and to assume liability for $400,000 of the latter company's 6 per cent first mortgage bonds.

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $5,000,000 of first mortgage 4½ per cent series D bonds maturing in 1960 to be sold at not less than 94, making the average annual cost to the railroad 4.88 per cent.

SEABOARD AIR LINE.—*Abandonment.*—See Tampa Northern.

SOUTHERN PACIFIC.—*Acquisition.*—The Interstate Commerce Commission has authorized the St. Louis-San Francisco, the St. Louis, San Francisco & Texas and the Fort Worth & Rio Grande to intervene in the proceedings on the Southern Pacific application for authority to acquire control of the St. Louis Southwestern.

ST. LOUIS-SAN FRANCISCO.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $10,000,000 of series A 4½ per cent consolidated mortgage bonds to be sold to J. & W. Seligman & Co. and the Guaranty Co. at 90¼, making the average annual cost to the railroad 5.043 per cent.

TAMPA NORTHERN. — *Abandonment.* — This company has been authorized by the Interstate Commerce Commission to abandon its Tooke Lake branch extending from Tooke Lake Junction to Tooke Lake, Fla., a distance of 12.29 miles. The order also permits the Seaboard Air Line to abandon the operation of this branch which it has been operating under lease since December 1, 1925.

TEXAS & PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Texas & Pacific Northern, which has been organized and has applied to the commission for authority to build 333 miles of new line in Texas, including a line from Big Spring to Vega, 232 miles. The Texas & Pacific Northern has also applied for authority to issue $350,000 of stock which the T. & P. proposes to acquire for $350,000 in cash.

WEST VIRGINIA MIDLAND.—*Abandonment.*—This company has been authorized by the Interstate Commerce Commission to abandon a portion of its line extending from Diana to Webster Springs, W. Va., a distance of 12.9 miles.

WESTERN FRUIT EXPRESS.—*Equipment Trust Certificates.*—This company and the Great Northern have applied to the Interstate Commerce Commission for authority for an issue of $405,000 of 4¼ per cent equipment trust certificates.

WESTERN PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $5,000,000 of first mortgage 5 per cent bonds maturing in 1946, to be sold to the highest bidder at not less than 97½, making the average annual cost to the railroad 5.24 per cent.

Dividends Declared

Alleghany Corporation.—Preferred A, $1.37, quarterly, payable November 1 to holders of record October 15.

Atchison, Topeka & Santa Fe.—Common, 2½ per cent, quarterly, payable December 1 to holders of record October 31.

Missouri-Kansas-Texas.—Common, $1.00, quarterly, payable December 31 to holders of record December 5.

Wheeling & Lake Erie.—Prior Lien, 7 per cent, payable October 15 to holders of record October 11 to October 14.

Average Prices of Stocks and of Bonds

	Oct. 14	Last week	Last year
Average price of 20 representative railway stocks.	99.73	102.88	155.23
Average price of 20 representative railway bonds..	94.97	95.87	90.40

Railway Officers

Financial, Legal and Accounting

Paul O. Klinger, who was recently appointed tax commissioner of the Boston & Maine, as announced in *Railway Age* of September 27, page 643, was born on September 28, 1890, at Kokomo, Ind., and received his education at the Maplewood Classical School from which he was graduated in 1907. He commenced his railroad career in August, 1908, as clerk in the accounting department of the St. Louis, Rocky Mountain & Pacific (part of the Atchison, Topeka & Santa Fe) at Raton, N. M., continuing in the employ of this

Paul O. Klinger

road until December, 1912. From January, 1912, to February, 1919, he was connected with the Indiana Electric Railway Company at Kokomo, serving in the capacity of general bookkeeper the first two years and as assistant auditor the last five years. From February, 1919, to June, 1924, he served with the Interstate Commerce Commission, Bureau of Valuation, as accountant. From June, 1924, to June, 1927, he was connected with the United States Treasury Department, Income Tax Unit, as railroad auditor, and in June, 1927, he entered the service of the Boston & Maine as tax accountant, the position he held until his recent promotion.

Effective October 1, the following changes were made in the accounting department of the Delaware, Lackawanna & Western, as announced in *Railway Age* of October 4, page 727: **R. B. Ferguson** was appointed comptroller, **R. O. Collins** and **P. D. Jonas,** were appointed assistant comptrollers and **Frank Wildey** was appointed auditor of disbursements.

Mr. Ferguson was born at Ontario, Can., in 1864, and commenced his railway career in August, 1894, with the Minneapolis & St. Louis. He entered the service of the D. L. & W. on May 1, 1900, as general accountant in which capacity he served until December 7, 1908, when he was appointed auditor of miscellaneous accounts. He was advanced to the position of auditor of disbursements on February 1, 1914, and to auditor in October, 1918. Mr. Ferguson was appointed general auditor, the position he held until his recent promotion, on March 1, 1920.

R. B. Ferguson

Mr. Jonas was born on January 17, 1891, in New York and was educated at the public schools of that city and at Columbia and City Colleges. He entered railroad service on June 15, 1912, with the D. L. & W. as clerk in the accounting department of the New York office. In March, 1916, he was appointed auditor of the Moore Timber Company (D. L. & W. subsidiary), and in April, 1919, he was promoted to general

P. D. Jonas

manager of that company. In March, 1920, he became statistician, which duties he relinquished when he was appointed assistant comptroller.

Mr. Collins who was born on December 10, 1879, at Brooklyn, N. Y., was educated in the public schools at Orange, N. J., and at Coleman's Business College and entered railroad service in January 2, 1906, with the D. L. & W. He held various clerical positions until March 1, 1910, when he was appointed chief accountant and on February 1, 1914, he was promoted to auditor miscellaneous accounts. On October 14, 1918, he was appointed auditor of disbursements and continued in this capacity during U.S.R.R. Administration and up

R. O. Collins

to the time of his recent advancement to the position of assistant comptroller.

Mr. Wildey who was born on May 15, 1871, at South Orange, N. J., received his education at Columbia School, South Orange, N. J., and entered railroad service on December 21, 1900, with the D. L. & W., as clerk in auditor of

Frank Wildey

freight and passenger department. He was transferred to the general auditor's department on April 1, 1901, and on September 1, 1906, he was appointed assistant voucher clerk. Two months later he was promoted to chief clerk in the department of the auditor of disbursements. On February 1, 1914, he was appointed registrar of disbursements and on October 14, 1918, he became assistant auditor of disbursements, the position he held at the time of his recent promotion.

Operating

E. G. Rohrbaugh, trainmaster on special duty in the office of the superintendent of freight transportation of the Pennsylvania, at Philadelphia, Pa., has been transferred to the Grand Rapids division at Grand Rapids, Mich.

Traffic

C. A. Rand, traveling passenger and immigration agent of the Great Northern, with headquarters at Des Moines, Iowa, has been promoted to district passenger agent, with the same headquarters, to succeed **W. M. Romine,** retired.

George A. Upton, northwestern freight agent of the Baltimore & Ohio, with headquarters at Minneapolis, Minn., has been promoted to division freight agent with headquarters at Garrett, Ind., and will be succeeded by **G. N. Campbell,** district freight agent at Toledo, Ohio.

Engineering, Maintenance of Way and Signaling

R. A. Brown, division engineer on the Chicago, Rock Island & Pacific at Cedar Rapids, Iowa, has been appointed roadmaster at Goodland, Kan.

J. B. Raymond, division engineer on the Atchison, Topeka & Santa Fe at Clovis, N. M., has been appointed roadmaster on the Panhandle & Santa Fe at Amarillo, Tex.

C. B. Hinchman, division engineer of the Cairo division of the Cleveland, Cincinnati, Chicago & St. Louis, at Mt. Carmel, Ill., has been appointed special engineer on the staff of the chief engineer at Cincinnati, Ohio.

The headquarters of **C. H. Brodbeck,** division engineer of the Paducah & Memphis division of the Nashville, Chattanooga & St. Louis, have been removed from Paducah, Ky., to Nashville, Tenn. The jurisdiction of **E. G. Talley,** assistant division engineer of the Nashville division, has been extended to include the Paducah & Memphis division.

The three positions of district engineer on the Baltimore & Ohio have been abolished and **A. C. Clarke,** who filled that position at Pittsburgh, Pa., has been appointed assistant chief engineer at that point; **A. H. Griffith,** at Cincinnati, Ohio, has been appointed assistant to the chief engineer at the same point, and **Richard Mather,** at Baltimore, Md., has been appointed assistant to the chief engineer at that point. **E. L. Gosnell,** assistant to the chief engineer, has been appointed principal assistant engineer, with headquarters as before at Baltimore.

Mechanical

The jurisdiction of **C. E. Peck,** superintendent of motive power of the Oregon-Washington Railroad & Navigation Company with headquarters at Portland, Ore., has been extended to include the Oregon Short Line between Huntingdon, Oregon and Green River, Wyo. The jurisdiction of **J. F. Long,** superintendent of motive power of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., has been extended over the Oregon Short Line branch to Butte, Mont. The duties of **H. Crane,** master mechanic on the Oregon Short Line at Pocatello, Idaho, have been extended to include the jurisdiction exercised by **W. H. Bressel** and **W. J. Ingling,** master mechanics at Pocatello, and the latter two positions have been abolished. The position of mechanical engineer of the Los Angeles & Salt Lake at Los Angeles, accupied by **H. C. Weaver,** has been abolished. **T. M. Ramsdell,** master car builder of the Oregon-Washington at Portland, has been granted a leave of absence because of illness and that position has been abolished. The position of mechanical engineer of the Oregon-Washington Railroad & Navigation Company at Portland, occupied by **Clinton O. Mikle,** has been abolished.

William Nelson, who has been promoted to superintendent of machinery of the Kansas City Southern, with headquarters at Pittsburg, Kan., was born at St. Paul, Minn., on March 28, 1882, and obtained his academic education in the public schools of that city and at the University of Minnesota, where he secured his technical training. Mr. Nelson entered railroad service on November 10, 1902, as a draftsman in the mechanical department of the Chicago,

William Nelson

St. Paul, Minneapolis & Omaha at St. Paul. Three years later, he became head draftsman for the Minneapolis, St. Paul & Sault Ste. Marie, and on January 1, 1910, he was promoted to chief draftsman. He was promoted to mechanical engineer of the Soo Line on September 1, 1917. Mr. Nelson was appointed mechanical engineer of the Kansas City Southern at Pittsburg on January 10, 1922, his promotion to superintendent of machinery becoming effective on October 1, following the death of **M. A. Hall.**

Purchases and Stores

J. L. Irish, general storekeeper on the Union Pacific System at Portland, Ore., has been transferred to Pocatello, Idaho, with jurisdiction extended to include the Oregon Short Line and the Los Angeles & Salt Lake, as well as the Oregon-Washington Railroad & Navigation Company.

Obituary

Otis Grant, superintendent of shops on the Canadian National at Leaside, Ont., died in a hospital at Toronto, Ont., on September 3.

William R. Begg, general solicitor of the Great Northern with headquarters at St. Paul, Minn., from 1906 to 1909 and previous to that period for seven years in the service of the law department of that railroad died recently at New York. Since 1909 Mr. Begg had been engaged in general law practice in New York.

J. N. Langan, master mechanic of the Illinois division of the New York Central with headquarters at Kunkakee, Ill., died at his home in that city on August 26, following a paralytic stroke.

Joseph A. Schmidt, who retired from railway service as general agent for the Southern Pacific at Atlanta, Ga., on January 1, 1918, died at his home in that city on October 7.

John I. Ferguson, who retired in 1927 as purchasing agent of the Indianapolis Union, with headquarters at Indianapolis, Ind., died recently in that city at the age of 75 years.

Frank J. Easley, former general manager of the Denver & Rio Grande and general superintendent of transportation of the Cuba Railroad, died at Los Angeles, Cal., on October 12, at the age of 70 years.

George W. Mulks, who retired as assistant controller of the Southern Pacific, with headquarters at New York on September 30, 1926, died at his home at Berkeley, Cal., on October 10, at the age of 66 years. Mr. Mulks had been connected with the accounting departments of the Marietta, Columbus & Northern (now part of the New York Central), the Union Pacific, the Oregon-Washington Railroad & Navigation Company, the Pacific Electric and the Southern Pacific successively since 1887.

Walter L. Webb, former engineer of track elevation and district engineer of the Chicago, Milwaukee, St. Paul & Pacific, at Chicago, died at his home at Elgin, Ill., on October 13, after an illness of three weeks. Mr. Webb was born at Dover, Mo., 76 years ago and obtained the degree of Civil Engineer from Washington and Lee University at the age of 20. For four years after his graduation from college he served under Capt. James B. Eads on the South Pass Jetty Works at the mouth of the Mississippi River. He entered railway service in 1879 as a transitman for the Atchison, Topeka & Santa Fe. From 1886 until his retirement in 1926, Mr. Webb served successively on the Milwaukee as assistant engineer, engineer in charge of track elevation at Chicago and Council Bluffs, Iowa, division engineer and district engineer. From 1915 to 1925 he was a member of the damage claim committee of the Chicago Union station.